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American Railroad Journal.

Saturday, May 6, 1854.

Pacific Railroad.

It is certainly singular that while the subject of a railroad to the Pacific is of such paramount interest and importance, so little has been done toward presenting it in that intelligent shape by which some reasonable estimate might be formed of the magnitude of the work, the probable cost of its construction and maintenance, the length of time required for building it, the facilities which exist for supplying to it wood and water, the capacity of the country, upon the several routes proposed, to support settlements, etc., etc. The necessity that exists for the road being admitted, its construction would appear, in popular estimation, to involve no problem different from those already solved in the success of the more important of our roads already built. The difference in the two cases is looked upon as one in *degree*, not in *kind*. If $35,000,000 has constructed the Erie road of 500 miles, it seems to be assumed, on all hands, that $140,000,000 will construct a railroad across the continent, of 2000 miles: or, if a grant of 2,500,000 acres of land has constructed the Illinois Central Railroad of 700 miles, it is supposed that a similar grant would furnish the means to build one to the Pacific.

These points being assumed, everybody becomes equally wise upon the subject, and talks with an authority suitable only to the person fitted to take charge of this stupendous enterprise. The assurance of every person is just in proportion to his ignorance; and were the former, in the present case, to be measured by the latter, certainly the difficulties that surround it have not made the first impression upon the popular mind.

It is greatly to be regretted that so little pains have been taken to derive the greatest amount of information from the explorations that have been made of the country to be traversed by either of the proposed roads. Nothing is more provoking than to take up a report of the governmental exploring parties. These parties give you approximate elevations of certain points on their routes; the range of the thermometer, the kinds of grasses, trees, reptiles, insects met with, the state of the weather at particular summits, the distances "between water," and the "double altitudes of *a* Aquarii, *b* Lyrae, *c* Andromedae, *d* Polaris, etc.," all very useful and interesting to *savans;* but helping very little to demonstrate the practicability of a railroad. All that is useful in such reports, as far as such a work is concerned, might be brought into a single page. If, on the other hand, there had been attached to each party a *practical* engineer, familiar with the construction of railroads, the public might, at the present day be in the possession of information, to obtain which years will be required.

Such a person would have mastered all the physical peculiarities of the route to which he was detailed, and by taking the Erie railroad, for instance, as a standard, could at once have intelligibly shown the relative magnitude of a railroad to the Pacific. He would have been able to have shown how far the proposed work corresponds to that of a road with which every body is familiar, and where the parallel ceases. *This* is the kind of information wanted. We can only measure what we do not see by what all *have* seen. The government engineers give us no such information, which would have been ten times more valuable, in a pecuniary point of view, than all they have told us. We must know haw the amount and cost of graduation, bridging, masonry, etc., etc. on the proposed road will compare with similar items on other roads. We want to know from what sources, and at what cost, fuel and water can be supplied. Such details as these would have given us something tangible to work upon, and we should now have been engaged in devising a *practical* plan of operations, instead of wasting time in '*talking big*' upon a subject upon which we know next to nothing.

While we are without the *data* necessary for the purpose of estimating the probable cost of the road, and the time required for its construction, we are enabled to form a pretty correct idea of the *physical* characteristics of the greater part of the country through which any road must pass. From the fact that these are so different from what they are generally supposed to be, and from the importance that they should be thoroughly understood, we will refer to one or two that are most peculiar, and at the same time constitute the greatest obstacles to the construction of a railroad.

One of the most striking physical features of the North American continent, is the great elevation of its Western half above the *sea*. From the Isthmus of Tehauntepec, nearly to the Arctic Ocean, the lowest depression in this great elevated range does not fall much below 5000 feet above the sea level. The lowest point over which it is proposed to carry a railroad from the Mississippi basin to the Pacific, is probably by the Northern route, where the range, by barometical measurement, is 4808 feet high. The next lowest point probably, is near latitude 32, and is about 5000 feet high. On the *South* Pass route the lowest point in the Rocky Mountain range is 7490 feet, and in the Bear Mountain range further West, 8430 feet. Gunnison makes the *Cochetopee* Pass on the Central or Benton's route, 11,082 feet high. The summit of the *Raton* in crossing from the head waters of the Arkansas to those of the Del Norte, is 7754 feet high. Santa Fe, in the valley of the last named river, is 6846 feet above tide. The lowest pass been the Del Norte and the Gila, is 6167 feet. About latitude 32° 30′, the great mountain ranges suddenly subside into a vast plain, from 100 to 150 miles wide, and extending from the Del Norte to the Colorado. The most elevated portions of the plain are about 5000 feet above the sea. Throughout its whole extent are detached ranges of mountains, rising from one, to three thousand feet above the plain. Upon the South of the plain commence the Sierra Madre ranges, which embrace the loftiest mountains on the continent. This range cannot be traversed even by mule trains, for several hundred miles after it commences in latitude 31.

Several necessary consequences naturally result from the extraordinary facts which we have recited. The *higher* the general elevation of a country, the *less* the quantity of rain that falls. In addition, this natural law, which would reduce the quantity of rain falling upon the great elevated plateau of the continent, is assisted by the lofty mountains that flank this plateau on both sides, the Rocky Mountains on the East, and the Sierra Nevada on the West. These lofty ranges intercept the moisture that otherwise would be borne from the sea to the interior, and precipitate it upon their summits, robbing the great valley lying between of the very first condition necessary to their fertility. This valley is consequently a vast desert, and must always remain such. Within this desert nothing can be raised without irrigation, which is limited to the narrow vallies of rivers. These are few in number, and often for a long distance flow through *canons*, impassible both to man and beast.

This great American desert not only fills up the space between the two great mountain ranges described, but extends far down the Eastern slope of the Rocky Mountains. The boundary line between the fertile lands and the desert commences on the Arkansas, near long. 98° West from Greenwich, or from 150 to 200 miles West of the boundary line of Arkansas, from 200 to 300 feet from the base of the mountains. Throughout the whole extent of this vast desert, all the running water is supplied from lofty mountains. Many of the rivers that descend from the mountains lose themselves in the sandy plains at their feet. These plains are destitute of timber; the greater part of their area of running or stagnant water, or grass. The river bottoms are occasionally fringed with scanty groves of cotton wood, a timber entirely unfit for the construction of a railroad.

Such are *some* of the conditions, under which a railroad to the Pacific must be built. The road, whatever route be taken, must be built and sustained from the *base* of operations at either end. That the work is *possible* there is no doubt. That for some years to come it is practicable, with such force as can be brought to bear upon it, by individual enterprize, or grants of lands, we do not believe. We admit we entertained a different opinion some time since, but a pretty thorough examination of the subject has convinced us that we were entirely mistaken. We believe our error is still shared by a great majority of the community. Our object is to dispel any erroneous view that may prevail. It is only when the magnitude of the work is fully understood, that our people and Government will devise means adequate to the task before them.

Mobile and New Orleans Railroad.

Messrs, Erastus Corning & Co., of Albany, it is stated, have proposed to take the construction bonds to the Mobile and New Orleans Railroad Company, which has been organized to build the road.

Rails for Sale.

Parties in want of *Rails* will do well to bear in mind that a sale of 1,500 tons is to be made by Messrs. Hoffman & Co., at the Merchants' Exchange, on the 10th inst. An opportunity for a good bargain is undoubtedly offered to parties in want.

Wilmington and Manchester Railroad.

SINKING PILES BY THE PNEUMATIC PROCESS.

This important road having been completed, and its Chief Engineer, Col. GWYNN, being about to sever his connection with it, he has, in view of this fact, submitted his final report, a portion of which we give below. This road forms the connecting link between the roads of South Carolina and Georgia, and other southern states, and the northern system. Probably no road has added more to the convenience of the travelling business public, by enabling them to avoid the long and dangerous voyage by sea from Wilmington to Charleston and Savannah.

The great obstacle to the construction of the above road was the Pee Dee River. This river flows over a bed of loose, shifting sand, and is subject to sudden and excessive floods, which occur at the *healthy* season of the year.

The great difficulty and expence of constructing piers ordinarily in use, lead to the adoption of the *pneumatic process* of sinking iron piles, which, we are happy to say, has been entirely successful, as will be seen by Mr. Gwynn's report.

The cylinders, air pump, engine to work it, etc., etc., were furnished by the West Point foundry of N York, the Principal of which, R. P. PARROTT, Esq., is highly commended for the excellence of the material and appara us furnished by him, and for the important aid rendered in introducing into this country this novel and valuable improvement.

The resident engineer of the company, L. J. Fleming, who has been identified with the road from the first, rendered efficient service, as did Mr. Holstrom, who at the commencement, superintended the operations, sinking the *piles*.

Subjoined are the material portions of Mr. Gwynn's report. Col. Gwynn desires us to convey an apology to several gentiemen who have written him, desiring information upon the subject of the foregoing process. He was unable promptly to reply to their favors, in consequence of a delay in the publication of his report, which he intended as an answer to such.

To the President of the Wilmington and Manchester Railroad:

You were, shortly after my entering your service, apprised of the difficulty of crossing the Great Pee Dee river, not on account of its breadth of water line, or the extent of the bordering swamps, but owing to the treacherous character of the bed of the river, involving difficulties in obtaining secure foundations for the piers, of which the experience in our country afforded no example. It had been my province to construct bridges across all the water courses from Portsmouth, in Virginia, to Wilmington, North Carolina, and, in some instances expedients, novel in their character, were resorted to, all, however, attended with success, I am happy to say, as time has proven. But in all my experience I have encountered nothing like the difficulties presented at the Great Pee Dee. The bed of the river, as far as it could be ascertained by the ordinary appliances for boring, proved to be an unbroken stratum of sand, into which piles could not be driven to a sufficient depth to ensure their permanency; cribs, or caissons, would have been undermined unless placed below the action of the current on the bottom of the river, and to effect this by the usual mode of coffer-damming with timber, would not have been practicable at an admissible cost. But for the necessity of making a draw for the passage of steamers, these difficulties might have been avoided in a great measure, by a bridge of a single span, stretching entirely across the river. In this dilemma, my attention, which had been drawn to this subject by publications in scientific journals, was now more particularly directed to the novel and interesting process of Dr. Potts, of England, for sinking hollow piles, by the pressure of the atmosphere.

In this process, which is one of the most beautiful and simple applications of a natural element to the uses of man yet discovered, "An air pump is employed, which, being connected with the head of the hollow pile, the air is exhausted, and a stream of water, sand, shingle, and gravel, sucking up from below, the pile sinks gradually into the displacement. It is therefore a kind of subaquatic excavation, the lower end of the hollow pile being converted into a kind of scoop, worked by the air pump on the platform above."

After mature consideration, and thorough examination of the subject, my mind was brought to the conviction, that the process could be successfully applied in sinking hollow piles, or cylinders, in such material as composed the bed of the Great Pee Dee. Of this I could entertain no doubt after reading the accounts of what had been accomplished by the "Pneumatic Process" in England. But the sickliness of the locality, its remoteness from the seaboard, whence the only means of transporting the heavy cylinders and apparatus (which had to be obtained at the North) were, by uncertain and irregular lines of steamers, hostile and unfriendly to the improvement, all conspired to create a painful anxiety and apprehension, not of the ultimate success of the work, but of delay and detention, which, in the prosecution of new plans and designs, lead to distrust, and sometimes to a withdrawal of that confidence so cheering and animating to a public agent, and without which his will may be palsied and the best schemes fail.

The bridge consists of two spans, one a hundred and thirty feet in the clear, the other, one hundred and thirty-five feet, and a draw, with an opening of seventy feet for the passage of steamboats, resting on four supports, as follows: commencing on the east side of the river—first, the draw-pier of timber, to be replaced with stone: secondly, four cylinders driven in pairs, close together, longitudinally, and ten feet apart transversely: thirdly, a pier composed of three columns of cylinders, two feet apart; and fourthly, a temporary abutment of timber, behind which it is designed to erect one of stone.

The outer diameters of the cylinders are six feet, the inner diameters are five feet eight inches, giving a circular ring of cast-iron two inches thick; each column (except the caps, which vary with the depth to which the columns are sunk) is composed of sections nine feet long, bolted together through flanges two inches thick: the bottom length has its lower edge bevelled so as to facilitate its sinking through the sand.

The machinery and apparatus employed, were an eight-horse high pressure engine, two air pumps, with a stroke of one foot, and with leather valves twelve inches in diameter, a receiver, or voider, composed of two sections of cylinders bolted together, and the ends closed by cast-iron caps bolted to the flanges, with an exhaust pipe communicating with the cap on the head of the cylinder, and the necessary sheers and appliances for lifting and handling the sections, all resting on two camels securely fastened together, their united width being thirty-two feet, and length fifty-two feet, the hold five feet. The process of sinking the cylinders was as follows. The sections forming the column to be operated upon, being placed in position, the cap bolted on, the exhaust pipe attached, and the receiver exhausted, the communication between the two was opened, when a vacuum was effected, and the result was found to be as hitherto described. The pressure of the atmosphere on the surface of the water in the river, combined with the hydrostatic pressure,*

* In the various descriptions of the "Pneumatic process," by the English engineers, it is remarkable that its efficacy is ascribed entirely to atmospheric pressure, and that no allusion is made to the hydrostatic pressure, its inseparable and important adjunct.

produced such a rush to fill the vacuum in the cylinder, that it caused an excavation under the bottom edge, into which the column sunk by its own weight, combined with that of the atmospheric pressure on the cap. The extent of the useful effect of each, as well as the sum of the applications of the atmospheric pressure, measured by the depth which the cylinders sink, is dependent, in general terms, upon the tenacity of the material forming the bed of the river. In the sand, clean and sharp—such as forms the bed of the Great Pee Dee River—the effect of the atmospheric pressure varied from six to eleven feet, obtained by repeated applications or blows of the exhaust, the repetition being dependent upon the varying character of the stratum of sand. When the pressure of the atmosphere ceases to act, it is necessary to get into the cylinder and excavate the obstructing materials. For this purpose, when the cylinder cannot be freed of water by pumps, the operation is reversed; the air, instead of being rarified is compressed, and the cylinder is virtually converted into a diving bell—a process which will be more fully described hereafter. In clay or compact gravel, the "Pneumatic Process" cannot be applied at all. In such material it will be necessary to excavate by manual labor from beneath the cylinder, and rely upon its gravity combined if needs be, with the pressure of the atmosphere on the cap, for driving it down.

Upon the first trial, the cylinder, which was in two sections, sunk five feet, it then became necessary to put on another section, which increased the space to be voided in so great a ratio to the exhauster, that a sufficient vacuum could not be produced, and the sinking of the cylinder under application of the exhaust was by very small increments.

In order to reduce the relative proportion between the capacity of the cylinder and the exhauster, and thereby obtain a more perfect vacuum, I caused the cylinder to be filled with logs. The pressure of the atmosphere was thus increased, and with the weight of the logs superadded thereto, the cylinder was readily sunk two feet ten inches more, when it ceased to obey the influence of the pressure applied, and would go no farther. Upon examination, it was found that its progress was arrested by the trunk of a tree. This check to our operations was an unexpected event, as in the borings to ascertain the character of the bed of the river no such obstruction had been discovered. It was particularly unfortunate that we should have to contend, in the beginning, with so serious an obstacle, which happily did not again present itself.

It was not until the first of May that the existence of the obstacle was fully established, and it was made manifest that its removal called for a reversal of the process heretofore employed, viz. instead of rarifying the air, it now became necessary to condense it in the cylinder, so that the water could be driven out, and the impediment cut away.

For the purpose of forcing the water out, should the ordinary process of pumping fail, and of enabling us to enter the cylinder and excavate the sand, should its friction counterbalance the atmospheric and hydrostatic pressure, I had provided an air lock, the application of which, for the removal of the hinderance caused by the trunk of the submerged tree, now became indispensably necessary. For its proper adjustment, however, much work was required to fit it up, and some additional hose and connections were wanting. But with every effort that could be made, it was not until the 10th of July that the air lock was finally bolted on the top of the cylinder and ready to be applied.

The air lock is simply a cap (bolted to the top of the cylinder) provided as in this case, with two chambers formed by projections above and below the top of the cylinders, into which any excavation from them is lifted and deposited preparatory to its final removal. At the top of each chamber there is a circular opening for the entrance of the men and the discharge of any material placed therein. This opening is closed by a flap lid when the air is compressed. In the portion of the chambers beneath the covering, which is formed by a flange encircling them, bolted to a circular rim with a plate across the centre; there is also an opening in each, secured by an iron door, suspended on horizontal hinges. Each chamber is provided with cocks, which afford a communication between the cylinders and the chambers, and between the chambers and the atmosphere. In future operations, I would recommend but one chamber to the air lock.

Every thing being in readiness, as before stated, on the 10th of July, the air pumps, converted into compressing pumps, were put in motion, and the air condensed in the cylinder to a degree sufficient to force the water beneath the lower edge, and at the same time upwards through a syphon; thus, by continuing a compression equal to the column of water outside, the interior of the cylinder was kept dry, and the men entered, excavated the superincumbent sand, and cut away the obstacle, which proved to be the trunk of a cypress tree covering one-half the bottom area of the cylinder, when the "pneumatic process" was resumed and the cylinder sunk to its place.

The use of the air lock, however, did not cease here. It was found that the pressure of the atmosphere, aided as it always is in the "pneumatic process," by the hydrostatic pressure,* the cylinders could not be sunk with a column of sand in them much exceeding six feet in height. To remove this impediment, as the water rose so rapidly in the cylinders that it could not be otherwise kept down, the air lock was resorted to, the water forced out, as before described, and the sand excavated, when upon letting off the compressed air in the cylinder, gradually, as was usual, it was observed to settle more than seemed to be due to its gravity alone. This led to the experiment (the credit of which belongs to Mr. Fleming, the resident engineer, who I omitted heretofore to state was placed in charge of the work in July) of allowing a rapid escape of the compressed air, when the same physical effect was produced as in the "pneumatic process," though proceeding now from hydrostatic pressure alone. The column of water on the outside, opposed by no resisting medium within the cylinder, rushed in, seeking its level, with a scouring impetus, which excavated the sand beneath the edge of the cylinder, when it sunk into the displacement by the force of its gravity. The success of this process, however, supposing always a sufficient depth of water, is mainly dependent upon the character of the material operated upon. If it be other than open sand, or sand intermixed with vegetable matter, mica, or other light substance of a compressible or yielding nature, little or no effect would be produced.

In the operations in England, owing, as I suppose, to the incompressible character of the beds of the streams in which the "pneumatic process" was applied, no mention is made of any settlement of the cylinders by hydrostatic pressure alone, but only that they descended when the compressed air was eased off through the space excavated below the edge of the cylinder.

In the management of another operation similar to that at the Great Pee Dee, I would so construct the air lock as to make it answer the double purpose of a cap for exhausting and compressing the air in the cylinder, and thus, upon the escape of the compressed air, by a timely application of the exhaust, always combine both the pneumatic and the hydrostatic pressure.

Many other modifications of the apparatus and imperfections, suggested and disclosed by our experience at the Great Pee Dee might also be made and remedied, which would lessen the cost and facilitate the process, which for the sake of brevity I have omitted.

Each column has been sunk on an average, thirteen feet in the sandy stratum of the bed of the river. On the 29th of December the seventh and last cylinder was sunk to this depth. It is my purpose if possible to sink them to the clay or shale formation which underlays the sand, or into the sand until a resistance is attained equal to the weight of the cylinders and superstructure of the bridge. In addition to this work, the labor now to be performed, comprises the putting on of the sections and caps, to raise them to the required height—the bracing and filing—every thing required in the place except the caps, and they have been ordered.

Contracts have been made for the wooden supports for the draw and western end of the bridge heretofore referred to, and also for the stone to take the place of these temporary structures. The superstructure of the bridge and draw was contracted for some time since, and the contractor is now engaged in procuring the materials and framing them. The arrangements which have been made, bid fair, should no untoward event occur, to insure the completion of the bridge, and the passage of the trains by the 1st of September.

The cost up to this time as furnished by the treasurer, for the cylinders, apparatus and labour is $31,889 39 to which may be added for the caps yet to be purchased, the filling, bracing, outstanding bills and contingencies $10,000 or in even numbers $42,000, for the cost of the seven columns of cylinders when ready for the reception of the superstructure of the bridge. The cylinders and most of the apparatus were obtained at the West Point Foundry, to whose scientific and accomplished proprietor R. P. Parrott, Esq., I take this occasion to acknowledge my indebtedness for many valuable hints and suggestions, and my obligations to him for his liberality in making the experiment of the "Pneumatic Process" at his foundry, which satisfied some doubts and influenced in a great degree my adoption of the plan. It is worthy of remark that not the slightest accident has occurred.

The material for filling the cylinders is a subject which has occupied my most serious and anxious consideration.—The more so, in consequence of its having been stated in the reports of the company that they would be filled with concrete, when it has from the beginning been my purpose to place the superstructure on the rims of the cylinders and fill them with sand, or as future developments may direct, with a column of concrete at the bottom sufficient to resist the statical pressure from without. In arriving at this determination, while the comparative cost of different materials and plans was kept in view, it had but little weight, in my estimation, compared with permanency and durability, the essential pre-requisites in all works, and especially so in the important work under consideration.

My inquiries therefore were mainly directed to the discovery of the elements which would impart these important desiderata and then their application to the most economical plan. This investigation led me to consider—first, whether I would place the superstructure on the metallic ring of the cylinders or on some material with which the cylinders might be filled: the consideration of this question necessarily involved the diameter of the cylinders, which for prudential considerations, as I was making the first experiment in the country of sinking large cylinders, I fixed at six feet exterior, and for reasons that will hereafter be given, five feet eight inches interior diameter. I will state in this place, that one of my reasons for deciding upon six feet external diameter was that whatever internal diameter might be determined upon, sufficient space would be left in the hollow part for the men to work in, should it become ne-

* In the "pneumatic process," the pressure of the atmosphere on the surface of the water around the cylinder, combined with the hydrostatic pressure, destroys the friction within and without, and acting on the bed of the river, causes the suction and the excavation displacement, before spoken of, under the bottom edge of the cylinder, while the pressure of the atmosphere on the cap, added to the weight of the cylinder and cap, forces it down, so that we have the force of air, water, and gravity, all combined; the force of the first being dependent upon the perfection of the vacuum in the cylinder and the area of the cap; the second, on the depth of the river, and the third, on the weight of the cylinder and cap.

cessary to enter the cylinder to remove obstructions. Six feet being then the limit of the diameter the question arose whether columns of masonry or concrete would afford a sufficient support for the bridge, in the event that the iron casing should in the lapse of time crumble away. I came to the conclusion that they would not possess sufficient stability, and if, after all, reliance had to be placed on the durability of the metal composing the cylindrical rings, it was unnecessary, if a cheaper substance would answer as well, to incur the expense of masonry or concrete; secondly, it now become necessary to consider the resistance opposed by the sand and gravel or clay on which the cylinders will rest, to their sinking therein, also whether the cylinders possess sufficient stability; and resistance to compression and flexure. Under the first head, we have the experiments of Mr. Charles Fox as given in evidence before the select committee of the House of Commons on the Westminster Bridge. The experiment was made upon cylinders six feet in diameter, and to use Mr. Fox's own words "we put on the top of the cylinder 100 tons of rails, but we could get no depression, except some three quarters of an inch, which was done by the little compression that you would have from the weight of the edge of the cylinder on the gravel." Now as a hundred tons will never be thrown upon any of the columns, and as the bottom upon which they will finally rest, will be as incompressible as that experimented upon by Mr. Fox; other things being equal the cylinders actually require no filling. By the practical formula* of Aodgkinson in Mr. Edwin Clark's work on the Britannia and Conway Tubular bridges, it will be found that cylinders six feet in diameter, two inches thick and fifty-five feet in height, (in round numbers, the height of the columns, at the Great Pee Dee,) possess a resistance to compression, flexure and crushing, six hundred and seventy-seven times greater than they will ever be subjected to by the dead weight of the bridge, combined with that of the passing trains. Hence the determination to give to the cylinders an internal diameter of five feet eight inches, and consequently a thickness of two inches. Third, the stability of the piers: upon this subject I had fully satisfied my mind, before the work was commenced. But without referring to the evidence or entering upon the train of reasoning which wrought this conviction, it will suffice to state, in the August fresh, the first cylinder, the one that had caused so much anxiety and apprehension, withstood a lodgment of drift thirteen feet deep where it rested against the cylinder, four hundred feet long and in breadth more than half the width of the river, a slight inclination being the only effect produced. This accumulation was caused by the camel which was moored just below and touching the cylinder, with its square corners stretching out on each side, and as a similar cause will probably never again exist there is no danger of such a mass being ever heaped up against the piers, and if it should be, as a single column stood the trial of this immense pressure, no danger can be apprehended from a failure of their combined action and power of resistance. Therefore the stability of the piers may be considered as placed beyond all question.

Fourth, and a very important consideration—the durability of the piers: although the duration of cast iron submerged for long periods in fresh water is not precisely fixed, enough is known of the effects of immersion to establish the belief that it extends to an indefinite period. The action of air and water whether fresh or salt, clear or foul, and at various temperatures, upon cast iron, wrought iron and steel has been experimentally investigated by Mr. Robert Mallet, civil engineer and M. R. I. A. at the request of the British Association for the advancement of Science; and the results published among the reports of the association for the years 1838, 1840, Amongst his experiments, he subjected a large number of specimens of cast iron to the action of clear fresh water for the space of 381 days, viz: from the 4th of August 1838 to 20th of August 1839. The specimens each five inches square and one inch thick, were arranged in a box and sunk to the bottom of the river Liffy above tidal limits, in a running stream varying with the season from 3 to 6 feet in depth —bottom fine granite sand—temperature from 32° to 68° Farenheit.

The specimens weighed on an average 42,000 grs., and the following are the average results of the corrosive action of the air and water, upon the square inch of surface expressed in grains, and decimals of a grain:

	Clear Water.	Foul Water.
Chilled Cast Iron.....	1,372	5,478
Cast in green sand	1,027	4,283
No. 2 bar iron	1,34	7,3
Cast iron, skin removed	2,59	6,83

Mr. Mallet also subjected specimens to the action of foul water, within tidal limits, in mid stream of the Liffy at Dublin, opposite the junction of Poddle river therewith; depth 4 feet at ebb and 15 to 20 feet at flood tide—the water fresh at ebb tide, and very brackish at flood—bottom soft putrid mud—temperature 36° to 61° F't. The results for 389 days are placed in the second column above.

When the surfaces of the east iron were protected, the protectors were the following:

	1st.	2nd.
Caoutchouc varnish.....	7	8
Best white lead paint....	8	7
Copal varnish.....	4	1
Asphaltum varnish....	8	2
Mastic varnish....	10	9
Swedish tar....	9	10
3 parts wax and 2 parts tallow...	2	4
Coal tar laid on hot.....	1	3
Turpentine varnish	5	5
Drying oil.....	6	6

The order of protective power against the action of clear water is given in the first column, and against the action of foul water in the second.

Taking the mean effect of exposure of cast iron to clear and foul water as given in the second item of the foregoing table, which is 2,655 grains per square inch for 381 days—as a fair parallel case to the exposure of the cylinders at the Great Pee Dee, and the depth of corrosion in a century on the supposition that the corrosive process is not in time accelerated, would be about one twentieth of an inch on the outer surface when unprotected. As I propose to seal the columns hermetically, there will be no corrosion on the inside. The preservative means intended to be applied, with the farther consideration of the constant rapid current of the Great Pee Dee, and the thickness of the cylinders, both conditions unfavorable to oxidation, the corrosion after the lapse of a century would be still less, if at all appreciable.

Mr. Mallet found in his experiments that the size of castings in iron, influences their rate of corrosion. With castings a fourth of an inch thick the amount of corrosion was "greatly more" than in castings one inch thick.

The thinner castings cool faster and more irregularly than the thicker, hence they are much less homogeneous and contain dispersed veins and patches harder than the rest of their substance; and hence as he supposes, the formation of voltaic couples and accelerated corrosion.

For the protection and preservation of those portions of the cylinders, exposed alternately to the action of air and water occasioned by frequent swells and freshes, it is proposed to use a coating of zinc paint: for those parts exposed to the effect of the atmosphere alone, a coat of coal tar or lead paint will be sufficient. Other expedients to prevent oxidizing may be resorted to if found necessary. For instance if there should be any perceptible decomposition at the circle of "wind and water," which I do not apprehend if care is taken to renew the coating of zinc paint, it may be checked, and the metal preserved by a belt of gutta percha. So that having it in our power to counteract by the most simple applications any tendency to oxidation, no fears need be apprehended of a speedy dissolution. The cylinders will stand for ages to come, proud monuments of your enterprise and perseverance.

Fifth, as to the material for filling the cylinders, the preceding arguments and citation establish the fact that no filling is absolutely necessary, nevertheless out of abundant precaution, I propose to fill them principally with sand, which by its lateral pressure, will present nearly the same power of resistance to the weight of the bridge, whether it be thrown directly on the column of sand, or on the metallic ring which upholds it.

Those who have a curiosity for investigating the properties of sand, some of which are strikingly paradoxical, will find it amply rewarded by turning to an article on the resistance of sand to motion through tubes, Vol. 18, Journal of the Franklin Institute.

Sixth, there is one other mode of constructing the piers which passed under review, and was duly examined. That is, to make the cylinders subservient alone to the uses of coffer-dams, and erect the piers of stone. But it proved upon enquiry that the masonry alone would cost $22 per cubic yard, besides subjecting the work to great delay. This plan was therefore discarded, and instead of assigning to the cylinders the subordinate part of shells in the construction of the piers, or as coffer-dams, bury them in the water and conceal them for ever from view, I determined to rear them up in all their stately proportions, and give them a share in sustaining the superstructure, thus combining, beauty and strength, economy and usefulness.

I have shown, I think, that the cylinders possess durability, and that the dimensions given them in all their parts, insure and combine sufficient stability and resistance to compression and flexure. They will be sunk to a depth believed to be below the influence of the current of the river on the bottom; if however, any washing or abrasion should be observed, it is proposed to arrest it, by covering the bed of the river around and between the piers with a layer of concrete. This remedy has been frequently resorted to elsewhere always with success, and should recourse to it become necessary it will surely be attended with a like result. It should be made the duty of the superintendent of the road, to make careful soundings after each fresh for next two years, and compare them with the soundings on file in the office, which show the present depth of water referred to a given level, and it would be well to make these examinations periodically for a series of years.

The road being now nearly completed, I consider it proper to offer a few remarks on the subject of "working it" as it is called. My attention has been long devoted to this important branch of railroad operations, and some views on the subject were presented by me in my report of 1840, at the time when the Wilmington and Raleigh Railroad had just been completed under my supervision.

These views might be greatly enlarged, and it would be my pleasure to extend them, had not this report already reached a length which I fear will be considered tedious. I will therefore decline the general discussion of the question, and beg permission simply to transcribe a leaf from the report above referred to, relating particularly to the current expenditures and the importance of details and minutiæ in those expenditures. This important division of the subject of railroad management of "working," as I observed on the occasion above alluded to, "comprises the purchase of rails, spikes, &c.; the renewal of them—the levelling up of the road—the filling up of the abra-

* For hollow cast iron columns of any length exceeding twenty-five times their diameter, and of any diameter, the practical formula for the breaking weight is $44.3 \frac{D3.6-d3.6}{l1.7}$ D. and d. representing the external and internal diameter in inches, and *l.* the length in feet:—44.2, the constant. This formula applied to the columns at the Great Pee Dee, the external and internal diameters of which are 72 and 68 inches, and length 55 feet—gives 44,023 tons for the breaking weight.

sions and washes in the embankments and slopes of the excavations—the cleaning out and opening of the ditches—the contracting for labor and provisions—collecting and arranging under different heads a monthly exhibit of the materials on hand, the quantity consumed, the cost and expenditures, the amount of labor rendered and the particular objects to which directed. The locomotive expenditures should exhibit the number of miles traveled by each engine; the wages of engine runners, machinists, blacksmiths, firemen and laborres; the cost of materials, waste, tools, wood, oil, tallow, brass, copper, iron; the repairs, and nature thereof, which should also be shown in the car and coach repairs.

In the transportation department the expenditures should show the pay of assistants, clerks, train agents, train hands; the cost of stationary, advertising, printing, losses, &c.; every item should be distinctly and clearly specified. Then follows the classifying and arranging of them under appropriate heads, so as to exhibit the receipts and expenditures in each department; and finally the income should be brought down and laid before the board on a balance sheet. At first view these details may seem to be onerous, and to involve an expenditure and consumption of time without any corresponding advantage; but with printed forms these multifarious and apparently complicated particulars are recorded with more facility, and with less reflection than is required to make an entry in a merchant's day-book—simply a few figures in the proper column registering the facts; without which the company cannot judge of the economy and propriety of the expenditures of the agents.

Nothing will tend so much to keep down the expenses of the company, as a periodical exhibit of these statistics. They are to the company, what the day-book, journal, and ledger are to the merchant. They show the cost, the receipts and and expenditures in detail, the only way in which extravagance and bad management can be made apparent; and it would be well if the railroad companies throughout the country were to unite in some form of account presenting the receipts and expenditures in the detail which I propose. This would act as a salutary check, and incite a spirit of emulation among the managers, that would prove beneficial to them, and to the whole railway system."

These recommendations were the result of much practical experience at the time they were made —subsequent experience and observation of fourteen years fully confirm them. With proper forms and headings, they can be carried into practical operation without the addition of a single agent over and above those ordinarily employed on railroads. I commend them to your favorable consideration, being fully convinced that agreat saving would be effected by their adoption.

In conclusion, allow me, gentlemen, to cougratulate you on the near completion of your road. Like nearly all of our southern works, it owes its origin and success to the determined will and untiring energy of a few public spirited individuals. And to none is it more indebted for its existance than to yourselves; there have been occasions of frequent occurrence where the least despondency would have proved fatal to the enterprise. In hands less bold, determined, and fruitful of expedients, and resources, it would have been long before this last important "link in the chain of railroad communication between the north and the south" would have been completed.

The benefits conferred by railroad facilities now so well known and understood, as to render it unnecessary to dwell upon them here, have already to a great extent been relised by your road. Lands have advanced in its vicinity to an amount exceeding its cost; capital and labor have been attracted from Virginia and the north eastern portions of North Carolina to the line of the railroad, the products of which it is estimated, will furnish fifty thousand tons of transportation, and this is said to be but a small portion of the accumulated wealth which will seek investments in the country bordering on the road.

The prospects therefore, are that the way business and travel will sustain the road and make the stock productive. Rival roads may turn off a portion of the through travel, but with what may be termed the "air line" connection with Augusta at the Camden Branch, and the railroad communication direct to Savannah from Branchville, both of which have been chartered, and will doubtless be accomplished, your road cannot fail to command a large portion of the travel from the southwest. So that there can be no doubt of ample remuneration to the stockholders.

Having been retained and continued in your service for some time past, particularly on account of the important work at the Great Pee Dee, the principal difficulties of which are now overcome, I respectfully tender my resignation of the office of Chief Engineer of the company, to take effect on the 1st of February.

I beg leave to avail myself of the occasion of my retiring from your service, to express my high appreciation of the confidence which you as well as the stockholders have always manifested towards me, and to offer my good wishes for the prosperity of the company.

I am gentlemen, very respectfully,
Your obedient servent,
WALTER GWYNN,
Chief Eng. W. & M. R. R. Co.

Junction Railroad.

We copy from the Connersville Times the following account of the condition and prospects of the above road.

The Junction railroad, extending from Indianapolis by way of Rushville, Connersville, Liberty and Oxford to Hamilton, where it connects with the Cincinnati, Hamilton and Dayton railroad, has been under contract and in process construction for more than a year past. It was originally incorporated by the Legislature of Indiana in February, 1848. In March, 1849, the Legislature of Ohio granted the right of way to the company to extend its road to Hamilton, and granted to the company all the rights and privileges conferred by the general law of Ohio, passed in February, 1848. In February, 1853, the road was extended from Rushville to Indianapolis under the general railroad law Indiana; and in March, 1853, the Legislature of Indiana conferred upon the company additional special privileges. The charter of this company is of the most liberal character. It is not restricted by individual liability, or any other illiberal provisions, which must destroy the value of the stock in any road organized under the new constitution of Ohio. A portion of the Junction road was put under contract in January, 1853; and at a subsequent period, the residue of the road from Indianapolis to Hamilton was placed under contract. There is now a large force upon every division of the road, and work to the amount of more than $300,000 has been done by the contractors.

The citizens of Cincinnati have taken more than six hundred thousand dollars of stock in the Junction road, a considerable portion of it in cash subscriptions; and the citizens of Indianapolis have about one hundred thousand dollars of stock in the road.

The Junction railroad from Hamilton Indianapolis, less than one hundred miles in length, will cost, when finished in complete running order, $2,130,000. There are no tunnels, sharp curves, or high grades upon this road. Eighty-five miles between Hamilton and Indianapolis are straight lines.

The local business of the road, passing as it does through flourishing towns surrounded by a rich and highly cultivated country, cannot certainly be exceeded by any other road between Cincinnati and Indianapolis. The contract of the company with the Cincinnati, Hamilton and Dayton road, secures the conveyance of passengers and freight between Indianapolis and Cincinnati without change of cars or delay.

The whole amount of stock subscribed to the Junction railroad is now more than two millions of dollars, of which the stock taken by the contractors, and the cash subscriptions amount to six hundred thousand dollars. The right of way has been obtained upon nearly the whole line, and the work is progressing so as to give assurance that it will be completed at an early day.

Ruttan's Patent Railroad Car Ventilator.

There is one car running on the direct route between New York and Buffalo, to which we would invite the attention of the world, as the most complete and perfect traveling vehicle yet devised. The width allows ample room for the fullest comfort of every passenger, and the elegance and luxury of its furnishing, common to all the express passenger cars of that line, raise it at once fully to the level of any traveling equipage extant, while the perfect operation of the ventilator as yet fitted only to this single carriage, entirely removes the sense of fatigue usually attendant on a protracted journey. The inventor of this arrangement, Henry Ruttan, Esq., of Coburg, Canada West, without laying claim to great scientific acquirements, or to any extensive experience in constructing such devices, has practically solved the problem of perfect ventilation without too much cooling the interior of a car in severe cold weather. The air is received, warmed, and expelled by a simple combination of fixed apparatus, without any delicate mechanism liable to be disordered, and in such a manner as to insure a proper and very nearly even temperature in all parts of the car. On the occasion of a recent journey over this road our attention was attracted to this ventilator, which elicited the warmest commendation from the passengers and from all employed on the train. It is intended to supply in summer a plenty of pure cool air, free from dust or other annoyances; but of its performances in that respect we can speak but theoretically, not having, as in its winter application, any positive proof of its efficiency. In this individual case it appears somewhat more cumbrous and powerful than is necessary in winter, though none too much so for summer weather. The fresh pure air is caught by a projecting box or cap on the center of the roof, and conveyed down a passage on the inside of the car, through the floor, to a shallow tank beneath. Spreading out here, it deposits its cinders, and to a considerable degree its smoke and dust, after which it rises through the stove—which is of peculiar construction, on the principle of a hot-air furnace—and is projected in every direction from the top of the stove into the car. The opening for its escape again from the interior to the open air is near the floor, and the current of warm foul air is conveyed under the entire length of the car, completely protecting the feet of the passengers from the influence of the external cold. Having completed this circuit, it is carried up through suitable passages and allowed to escape from a cap on the top. These ejecting caps are at each end of the car, to allow of running in each direction, and are closed by light self-acting valves, opening outward. The current induced by the rapid motion through the air closes the valve on the forward and opens that on the hinder one, and each valve is so balanced by a short loaded lever or tumbling bob, that the weight tends equally to hold either open or closed. It results from this contrivance, (which may appear paradoxical to some, but is easily constructed by any mechanic,) that whichever position the valves may assume in the most rapid motion, will be maintained until the motion is reversed. The openings from these ejectors or exhausting boxes into the cars are controlled by hand, but the only effect of exhausting direct from either end may be an unpleasant cooling of the floor. The temperature at the front, middle and rear, on one occasion, was respectively 65, 75 and 69 degrees, and on another, 72, 90, and 79 degrees, the thermometers being in the first trial exposed at each end of the car to an intimate contact with the cold window, and in the second exposed in the middle to direct radiant heat from the stove. A third trial, under favora-

ble conditions for testing the actual temperature of the air, gave 72, 72, 72 degrees, in the three locations, above the heads of the passengers, while a thermometer laid in the passage way near the end—in the location usually occupied by a stratum of cold air flowing from the crack under the door—indicated 65 degrees Fahrenheit. Another trial gave 62, 65, 65 degrees at the top, and 66 degrees on the floor, the increased temperature being probably due to some accidental chance. We have been thus particular, because facts rather than theories are what is now required in regard to ventilation, and the feelings cannot well be trusted. A few comparisons having established the evident offensiveness of the unventilated cars in the train, the senses alone might perhaps be ready to accord unmerited praise to Mr. Ruttan's invention.

The apparatus is capable of various modifications in the details and location of the parts, several of which the inventor proposes soon to introduce. The shallow water tank underneath should in summer be of the greatest practicable area, and provided with gratings or their equivalents, to be kept wet by motion of the car, so as to present the largest possible amount of water surface to collect the dust from the air. If this portion of the apparatus can be worked as efficiently as the warming and ventilating is now performed, railroad traveling in summer will begin to assume the comfort and character of a respectable and dignified employment, instead of, as at present, inducing the appearance of a sheep stealer, or at least of a coal heaver, in every unfortunate who is compelled to travel either for business or pleasure. From present appearances, any company adopting these ventilators will have little difficulty in monopolizing all the pleasure travel, provided they are always as successful as the one under consideration.

Condition of the Cumberland Coal and Iron Company.

Andrew Mehaffey, Esq., the President of this company, has issued a circular, dated April 20th, which contains the following interesting statement of its present condition:

Railroad, Rolling Stock, Mine Cars, Machinery, &c.,	$575,316.65
Canal Boats, Steamers, Schooners, Barges, and other Personal Property, Real Estate, in the cities of Cumberland, Alexandria and Baltimore,	464,079.42
Mining Lands, Improvements at the Mines, &c.,	4,595,897.71
Cash Assets, Bills Receivable, and Balances due on Accounts,	267,197.82
	$5,902,491.60

2,822 Shares of the capital stock belong to the company.

The property comprises 12,000 acres of coal, lands, on which 5 mines have been opened and worked; 11 miles of locomotive railroad, extending from the company's mining village of Eckhart to Cumberland, and connecting with the Chesapeake and Ohio canal and the Baltimore and Ohio railroad; mine railways extending from main track into each opening; 5 locomotives; 70 hopper and gondola cars; 400 mine cars; horses, implements and machinery for mining 2,000 tons of coal daily; several acres of land in Baltimore and town of Cumberland; extensive wharves and wharf-room at Alexandria; 44 barges, of 200 tons, plying inland from Baltimore to Philadelphia and New York, built by the company within the past year; 54 canal boats on the Chesapeake and Ohio canal; and 12 sailing vessels, of from 200 to 600 tons burthen.

The company has no floating debt. Its bonds, originally $825,000, were anticipated, paid and cancelled to the amount of $288,000, leaving outstanding $537,000.

Since the resumption of work, the company has already dispatched a daily average of 833 tons of coal to market, and is constantly increasing the quantity.

Report of the Pennsylvania Railroad.

The following statement shows the tonnage of articles received at, and sent from Philadelphia, via the Pennsylvania Railroad, during the year 1853. The statement will constitute an interesting comparison with the business of similar routes.

LIST OF ARTICLES.	Sent from Philadelphia to Pittsburg.	Received at Philadelphia from Pittsburg.	Sent from Philadelphia to Way Stations.	Received at Philadelphia from Way Stations.
Agricultural Implements,	....	113,038	43,638	31,622
Boots, shoes, hats, &c.,	5,102,305	....	457,889	....
Books and stationery,	1,831,008	105,115	133,990	26,276
Butter, eggs, &c.,	502	856,067	....	1,602,100
Brown sheeting and bagging,	2,547,250	....	164,277	....
Bark and sumac,	....	....	....	993,085
Cedarware,	81,908	10,407	112,281	....
Confectionery and foreign fruits,	809,768	....	294,046	....
Coffee,	1,232,574	....	961,048	....
Cotton,	....	893,036	13,203	....
Coal,	....	4,500	18,087	6,385,480
Camphine and burning fluid,	....	....	51,915	....
Copper and tin,	192,061	63,437	192,519	....
Dry goods,	33,070,486	440,680	2,640,919	61,919
Drugs, medicines and dyestuffs,	2,782,757	55,492	829,681	145
Fresh meats, poultry and fish,	....	6,000	....	223,394
Flour,	....	29,125,144	....	11,906,470
Feathers, furs and skins,	....	677,368	....	15,616
Furniture and oil cloth,	551,442	39,246	209,521	49,117
Glass and glassware,	442,881	271,709	203,288	610
Green and dried fruits,	....	3,210,915	....	392,883
Grass and other seeds,	....	549,829	4,207	915,178
Grain of all kinds,	....	166,047	....	2,973,660
Groceries, (except coffee,)	1,894,202	109,743	3,573,679	8,368
Ginseng,	....	99,120	....	....
Hardware,	4,885,946	540,704	1,224,759	229,896
Hides and hair,	....	209,932	1,784,718	75,890
Hemp and cordage,	124,110	1,257,429	173,625	....
Iron, rolled, hammered, &c.,	227,500	174,058	1,239,598	457,417
Iron, blooms and pig,	....	....	11,200	1,264,351
Live stock,	326,305	6,320,100	59,115	3,855,695
Lead and shot,	9,862	21,544	5,727	....
Leather,	855,898	409,871	155,964	2,291,856
Lard, lard-oil and tallow,	....	5,292,295	....	94,632
Lumber and timber,	....	12,490	....	1,837,168
Machinery, castings, &c.,	2,491,490	325,272	1,718,337	....
Marble and cement,	778,019	25,289	683,842	....
Malt and malt liquors,	48,405	6,291	181.586	3,175
Nails and spikes,	2,000	....	367,920	544,080
Oil,	675,885	....	442,066	....
Oysters,	218,849	....	12.728	....
Paper of all kinds, and rags,	657,833	14,758	....	150,572
Plaster,	8,055	....	89,636	....
Potatoes, turnips, &c.,	50,451	....	64,227	45,819
Pot, pearl, and soda ash,	879,197	45,317	....	....
Queesnware and earthenware,	1,517,487	276,219	451,569	1,185
Salt meats and fish,	759,955	21,034,944	1,264,023	133,716
Soap and candles,	13,202	784,131	72,554	7,225
Tobacco,	611,076	905,335	286,636	4,126
Tar, pitch and rosin,	44,570	1,465	56,665	....
Wines and liquors, foreign,	702,374	16,450	637,026	....
Whisky and alcohol,	5,185	965,231	1,345	583,856
Wool and woolen yarn,	36,135	2,189,109	53,858	214,568
Miscellaneous,	914,187	66,437	196,603	53,998
Total First Class,	43,044,035	2,258,401	4,650,423	2,049,436
Total Second Class,	17,036,824	8,984,118	9,333,668	1,971,958
Total Third Class,	6,315,885	9,280,954	3,844,904	6,041,400
Total Fourth Class,	2,207,773	57,151,131	3,476,290	27,530,264
Total during year. Pounds,	68,604,217	77,674,604	21,305,285	37,593,158

The following is a statement of the monthly receipts and expenditures of the Pennsylvania Railroad.

Date.	Gross Rec'ts	Expenditure.	Net Rec'ts.
January,	$235,383 28	$124,729 25	110,654 03
February,	285,068 49	128,163 20	156,905 29
March,	311,591 92	168,206 07	143,385 85
April,	260,334 43	140,637 62	119,696 81
May,	185,767 01	121,945 27	63,822 64
June,	150,320 73	114,986 41	36,232 32
July,	148,560 84	*170,545 78	*21,984 94
August,	225,312 57	128,764 97	96,547 60
September,	248,528 10	130,489 51	118,038 59
October,	234,193 99	131,862 19	102,331 80
November,	237,536 76	132,247 58	105,289 18
December,	252,282 35	*181,993 44	70,288 91
*Including State Tax.	$2,774,889 37	$1,673,681, 29	$1,101,208 08

THE TREASURER REPORTS

	Dolls.	C.
Amount received from Stockholders, in payment of Instalments,	11,228,020	00
Amount received on account five million loan,	4,491,654	32
Amount received from Passengers, Freight, Mails, Expresses, &c.,	2,768,769	72
Temporary Loans,	593,293	59
	19,081,737	63

AMOUNT EXPENDED.

EASTERN DIVISION.

Graduation and Masonry,	$1,956,642 87		
Superstructure, Ballast, Chairs, Rails, Ties, Spikes, Sills, &c.,	1,908,235 35		
Engineer Department,	174,686 34		
Land Damages, Real Estate, Right of Way, &c.,	325,175 09		
Real Estate in Philadelphia County,	344,341 62		
Repairs Harrisburg and Lancaster Rail Road,	7,173 41		
		4,716,254	68

WESTERN DIVISION.

Graduation and Masonry,	4,315.063 03		
Superstructure, Ballast, Chairs, Rails, Ties, Spikes, Sills, &c.,	1,145,378 30		
Engineer Department,	202,140 10		
Land damages, Real Estate, Right of Way,	149,509 06		
		5,812,090	49

SECOND TRACK.

Graduation,	429,369 05		
Superstructure, Ballast, Chairs, Rails, Ties, Spikes, Sills, &c.,	723,483 54		
		1,152,852	59
Machine Shops, Repair Shops, Stations, Warehouses, &c.,	991,966 36		
Locomotives and Cars,	1,660,710 01		
Subscription to			
Marietta and Cincinnati Rail Road, $650,000 00			
Maysville and Big Sandy Rail Road, 100,000 00			
Ohio and Pennsylvania Rail Road, 150,000 00			
Ohio and Indiana, Rail Road, 300,000 00			
Springfield, Mount Vernon, &c., 100,000 00			
	1,300,000 00		
Transportation Expenses, State Toll, Harrisburg and Lancaster Rail Road Toll, Interest, Expenses, &c.,	2,466,209 50		
To credit of *cost of construction*,	302,560 22		
	2,768,769 72		
Cost of construction, balance on Stockholders' Interest List,	26,768 51		
		6,748,209	60
		18,429,407	36
Balance in hands of Treasurer and Agents,		652,330	27

[E. E.]

Philadelphia, January 1, 1854.

GEORGE V. BACON, *Treasurer.*

New Jersey Central Railroad.

The annual meeting of the stockholders of the Central railroad of New-Jersey was held at Elizabethport on the 1st inst. The annual report was read, which gives the following statement, exhibiting the condition of the company:

STATEMENT.

Total Receipts for last year	$365,832 72	
Ordinary Expenses	186,622 63	
Net Earnings	$179,210 09	
Paid in on Capital Stock		$2,679,935
Mortgage Bonds		1,500,000
Other indebteness		77,006
Unpaid Dividend		53,131
Cost of Road	$1,527,928 35	$3,310,072
Station-houses, Shops, &c	83,000 00	
Lands and works at Elizabethport	70,663 52	
Ferry interest and boats	189,650 00	
Equipment	263,931 00	
Other property and materials	55,049 41	
Renewals	37,048 88	
Interest	32,211 22	
Cash and cash items	45,590 84	
		$3,31[illegible],073

The stockholders then took into consideration a supplement to their charter, passed by the last Legislature, which was read and accepted.

The following board of directors for the ensuing year were chosen: John S. Johntson, Jno. C. Greene, Benj. Williamson, Fred. T. Frelinghuysen, Wm. E. Dodge, Adam Norris, John O. Stearns, H. D. Maxwell, Alfred Vail. The work of laying a double track is progressing. The Lehigh extension is in a state of forwardness and it is probable that the connection will be made so as to bring down coal before the next winter.

Sandusky and Louisville Railroad.

SANDUSKY AND LOUISVILLE RAILROAD—CONTRACT LET TO A. DEGRAFF.—We have just learned that the contracts for the completion of the first section of the Sandusky and Louisville road, from Huntsville to Piqua, were let Thursday, to A. DeGraff, at a price entirely satisfactory to the company. The bids were numerous. Energetic and responsible contractors from Kentucky, Indiana, and other States were among the bidders; and their estimate of the importance of the enterprise was evinced by offers to receive a large proportion of the stock of the road in payment.

The first 11 miles, from Huntsville to DeGraff, is to be completed in six months, and to Piqua in ten months more. From Piqua to Eaton, 36 miles, the work is well advanced and will be ready for opening at an early day. This will leave but 12 miles in Ohio, to be built; and this 12 miles will, of course, be completed to connect with the Indiana portion of the line, soon to be let.—*Sandusky Register.*

New York and St. Louis.

It is almost incredible that these two cities, the one in the Mississippi Valley near the mouth of the great Missouri; and the other at the mouth of the Hudson, on the Atlantic, some thirteen hundred miles, or more apart, should now be placed within less than sixty hours of each other. It is but a few years since the same journey occupied as many days, and involved an expense in money besides, which none but the "favored few" could afford. But, now, three days and twenty-five or thirty dollars are all the requisitions necessary for the trip. For particulars we invite attention to the card of Mr. JOHN F. PORTER, agent of the Michigan Southern Railway, in another column.

Mortgage Bonds of the Harlem Railroad.

This Company are about to consolidate their entire indebtedness by an issue of $3,000,000 of bonds which are to constitute a first and only *lien* upon the road and the property of the Company. Of this loan, the Company reserve $1,300,000 for the exchange of all the outstanding plain Bonds of the Company now in existence, and propose to dispose of the residue, One Million Seven Hundred Thousand Dollars, for the purpose of discharging all their floating debt, and of payment of the expenditure necessary for the full completion of the improvements now in progress upon the road.

The capital of the Company paid in is $1,500,000 of Preferred Stock, and $3,600,000 of Common Stock, upon which regular dividends have been earned and paid for the last five years of Eight (8) per cent. per annum on the former and Four (4) per cent. on the latter.

The receipts of 1853 amounted to $964,476, being an increase of twenty-six (26) per cent. over 1852, and there is no doubt a still larger business will be done the present year.

The amount paid in dividends on stock the past year, after paying *interest* on the debt, was $264,000, or $54,000 more than the interest on a funded debt of $3,000,000.

It would be difficult therefore to find a better security than the one about to be created, taking the *past* earnings of the Company as a criterion.

But the value of the position occupied by the Harlem road, in this city, has neither begun to be fully understood by the public, nor felt in the receipts of the road. While the upward progress of the city threatens to drive back the locomotive upon all other existing, or proposed routes, the *Harlem* will always form an exception to other lines. This road can be so constructed as to allow the trains to run, at all times, at full speed, to 32d street, even should the whole island be covered with as dense a population as is found in the lower wards. This invaluable privilege, secured to it by the peculiar location of its line, and its capacity for future improvement, in our opinion renders that portion of the Company's road on Manhattan Island, worth more than the whole funded debt. Between the two tunnels, the track can, at comparatively trifling expense, be raised sufficiently to be above the reach of the ordinary travel. When this shall be done, the depot will be located *on* the elevation through which the lower tunnel is constructed. From that point, branch roads will radiate to every part of the city. The Company

have paid for this advantage by the depreciated value of the stock for a long term of years. But this advantage is secured, and will soon begin to yield its fruits. The privilege of running a locomotive train from the head of the island to 32d street, and through what must soon be one of its most densely inhabited portions, is one, the value of which can hardly be over estimated.

American Railroad Journal.

Saturday, May 6, 1854.

Railway Furnishing Agency, Chicago, Ill.

Chicago has become, within the last five years, one of the greatest railway centres in the world, and all the roads terminating within her bounds have located there machine and repair shops. It is a natural consequence that the demand for almost all kinds of stock and all classes of equipment, is constant and large; and much inconvenience has no doubt been experienced from the fact, that there has been no furnishing establishment at hand, from which they could be obtained at once.

There is no longer any difficulty on this point, however, as Mr. E. R. T. Armstrong has recently established there an agency, for the express purpose of aiding both railway and manufacturing companies.

It will be seen by reference to his card, that Mr. Armstrong designs keeping on hand such articles as are most required by railway companies, of the best manufacture. There can be no doubt that he can serve beneficially both interests, with which he is most intimately connected, at the same time that he will serve himself.

Stock and Money Market.

The Share market for the past week has been heavy, though without an excessive decline in prices. Money is in more active demand from the wants of the mercantile community at this period of the year. There is only a nominal business doing in railroad bonds on stock for investment. In fact, for no time for several years previous has there been such a general dulness in the share and bond market, and such an indisposition to enter into new engagements involving the use of large sums.

The coinage at the Philadelphia Mint for the first four months of the present year is thus reported:

Gold.	
Double Eagles	$9,790,920
Eagles	365,640
Half Eagles	333,585
Quarter Eagles	554,025
Dollars	470,881
Gold	$11,515,051
Silver.	
Half Dollars	$654,000
Quarters	1,678,000
Dimes	135,000
Half Dimes	50,000
Silver	$2,517,000
Total	$14,032,051

The receipts of California gold this year thus far compare as follows with those of last year:

	1853.	1854.
January	$4,962,962	$4,201,000
February	3,548,523	2,514,000
March	7,533,752	3,982,000
April	4,766,000	3,442,000
Totals	$20,811,238	$14,139,000

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net Earnings for last official yr.	Dividend for do.	Price of Shares.
Atlantic and St. Lawrence	Maine.	150	1,538,100	2,973,700	5,973,700	254,743	113,520	none	83
Androscoggin and Kennebec	"	55	824,863	1,043,540	2,036,140	177,003	80,053	none	30
Kennebec and Portland	"	72	1,073,673	1,439,694	2,520,981	168,114	100,552	none	41
Port., Saco and Portsmouth	"	51	1,355,500	123,884	1,459,384	208,669	....	6	98
York and Cumberland	"	20	285,747	341,100	713,605	23,946	11,256	none	24
Boston, Concord and Montreal	N. H.	93	1,649,278	622,200	2,540,217	150,538	79,659	none	30
Concord	"	35	1,485,000	none.	1,485,000	305,805	141,836	8	104
Cheshire	"	54	2,078,625	720,900	3,002,094	287,768	55,266	5	37
Northern	"	82	3,016,634	....	....	328,782	163,075	5	52
Manchester and Lawrence	"	24	717,543	....	....	....	....	6	85
Nashua and Lowell	"	15	600,000	none.	651,214	132,545	51,513	8	108½
Portsmouth and Concord	"	47	....	....	1,400,000	....	....	none	....
Sullivan	"	26	....	....	673,500	....	....	none	12½
Connecticut and Passumpsic	Vt.	61	1,097,600	550,000	1,745,516	....	....	none	26
Rutland	"	120	2,486,000	2,429,100	5,577,467	495,397	266,539	none	9½
Vermont Central	"	117	8,500,000	3,500,000	12,000,000	....	....	....	9½
Vermont and Canada	"	47	1,500,000	....	1,500,000	Leased to	the Vt. C	ent.	97½
Western Vermont	"	51	392,000	700,000	....	Recently	opened.	none	....
Vermont Valley	"	24	....	....	....	....	....	none	....
Boston and Lowell	Mass.	28	1,830,000	206,190	2,044,536	434,599	114,098	6	90
Boston and Maine	"	83	4,076,974	150,000	4,111,345	803,024	418,358	8	103½
Boston and Providence	"	55	3,160,000	402,326	3,579,041	509,326	226,639	6½	81
Boston and Worcester	"	69	4,500,000	590,541	4,850,754	887,219	413,289	7	99
Cape Cod branch	"	29	421,950	180,000	633,906	68,942	26,412	5	40
Connecticut River	"	52	1,591,110	286,363	1,802,244	258,220	102,098	4	55
Eastern	"	58	2,850,000	1,192,975	3,120,391	620,810	310,875	6	84
Fall River	"	42	1,050,000	6,208	1,050,000	294,183	126,589	8	95½
Fitchburg	"	67	3,540,000	191,500	3,716,870	626,659	214,633	6	88½
New Bedford and Taunton	"	20	500,000	none.	529,964	188,442	46,839	7	117
Boston and New York Central	"	74	1,159,228	953,370	2,221,068	90,315	35,214	none	68
Old Colony	"	45	1,964,070	295,038	2,293,534	374,897	122,866	none	96½
Taunton Branch	"	11	250,000	none.	307,136	159,738	21,490	8	....
Vermont and Massachusetts	"	77	2,233,939	1,139,615	3,207,818	244,323	13,144	none	15½
Worcester and Nashua	"	46	1,140,000	194,445	1,342,593	182,398	81,807	5	62
Western	"	155	5,150,000	5,319,520	9,953,258	1,525,224	746,736	7	96½
Stonington	R. I.	50	....	467,700	....	240,572	110,892	....	66
Providence and Worcester	"	40	1,457,500	300,000	1,791,999	291,417	120,892	6	95
Canal	Conn.	45	922,500	500,000	1,400,000	....	....	4	65
Hartford and New Haven	"	72	2,350,000	800,000	3,150,000	639,529	294,269	10	122
Housatonic	"	110	....	....	2,500,000	329,041	168,902	none	....
Hartford, Prov. and Fishkill	"	50	....	....	In progres	69,629	....	none	....
New London, Wil. and Palmer	"	66	558,861	800,000	1,511,111	114,410	....	....	39
New York and New Haven	"	61	3,000,000	1,641,000	4,978,487	806,713	428,173	7	90
Naugatuck	"	62	926,000	440,000	....	....	....	8	....
New London and New Haven	"	55	750,500	650,000	1,380,610	Recently	opened.	none	40
Norwich and Worcester	"	54	2,121,110	701,600	2,596,488	267,561	116,965	4	54
Buffalo and New York City	N. Y.	91	900,000	1,550,000	2,550,500	Recently	opened.	none	....
Buffalo, Corning and N. York	"	132	....	....	In progres	....	....	none	65
Buffalo and State Line	"	69	879,636	872,000	1,921,270	Recently	opened.	....	130
Canandaigua and Niagara F	"	50	....	....	In progres	....	....	....	....
Canandaigua and Elmira	"	47	425,509	582,400	987,627	76,760	39,360	none	....
Cayuga and Susquehanna	"	35	687,000	400,000	1,070,786	74,241	23,496	none	....
Erie, (New York and Erie)	"	464	10,000,000	24,003,865	33,070,863	4,318,962	1,800,181	7	70
Hudson River	"	144	3,740,515	7,046,395	10,527,654	1,063,659	338,783	none	64
Harlem	"	130	4,725,250	977,463	6,102,935	681,445	324,494	4	50
Long Island	"	95	1,875,148	516,246	2,446,391	205,068	44,070	none	28
New York Central	"	504	23,085,600	10,773,823	33,859,423	....	....	....	104½
Ogdensburgh (Northern)	"	118	1,579,969	2,969,760	5,133,834	480,137	195,847	....	19
Oswego and Syracuse	"	35	350,000	206,000	633,598	92,353	46,072	....	70
Plattsburg and Montreal	"	23	174,042	131,000	349,775	Recently	opened.	none	....
Rensselaer and Saratoga	"	25	610,000	25,000	774,495	213,078	96,737	....	....
Rutland and Washington	"	60	850,000	400,000	1,250,000	Recently	opened.	....	....
Saratoga and Washington	"	41	899,800	940,000	1,832,945	173,545	135,017	none	30
Troy and Rutland	"	32	237,690	100,000	329,577	Recently	opened.	....	33
Troy and Boston	"	39	430,936	700,000	1,043,357	Recently	opened.	none	....
Watertown and Rome	"	96	1,011,940	650,000	1,693,711	225,152	116,706	8	93
Camden and Amboy	N. J.	65	1,500,000	....	4,327,499	1,388,385	478,413	10	148
Morris and Essex	"	45	1,022,420	128,000	1,220,325	149,941	79,252	7	....
New Jersey	"	31	2,197,840	476,000	3,245,720	603,942	316,259	10	131
New Jersey Central	"	63	986,106	1,500,000	2,379,880	260,899	124,740	3	....
Cumberland Valley	Penn.	56	1,184,500	13,000	1,265,143	118,617	76,890	5	....
Erie and North East	"	20	600,000	....	750,000	Recently	opened.	....	125
Harrisburgh and Lancaster	"	36	830,100	713,227	1,702,523	265,327	106,320	8	55
Philadelphia and Reading	"	95	6,656,382	10,427,800	17,141,987	2,480,626	1,251,987	7	74½
Philad., Wilmington and Balt.	"	98	5,000,000	2,399,166	8,067,285	868,088	541,769	5	78½

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of $100.

NAME OF COMPANY.		Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net earnings for last official yr.	Dividend for do.	Price of shares.
Pennsylvania Central	Penn.	250	9,768,155	5,000,000	13,600,000	1,943,827	617,625	....	97
Philadelphia and Trenton	"	30	....	....	....	....	....	....	....
Pennsylvania Coal Co	"	47	....	....	....	....	....	....	102½
Baltimore and Ohio	Md.	381	13,118,902	5,677,103	22,254,338	2,033,420	798,193	7	62
Washington branch	"	38	1,650,000	....	1,650,000	348,622	216,237	8	....
Baltimore and Susquehanna	"	57	....	....	....	413,673	152,536	....	..
Alexandria and Orange	Va.	65	....	....	In prog.	....	....	....	....
Manassas Gap	"	27	....	....	In prog.	....	....	....	....
Petersburgh	"	64	769,000	173,867	1,163,928	227,593	72,370	7	77
Richmond and Danville	"	73	1,372,324	200,000	In prog.	....	....	....	70
Richmond and Petersburgh	"	22	685,000	....	1,100,000	122,861	74,113	none	40
Rich., Fred. and Potomac	"	76	1,000,000	503,006	1,531,238	254,376	113,256	7	100
South Side	"	62	1,357,778	640,000	2,106,467	62,762	....	....	....
Virginia Central	"	107	1,673,684	469,150	2,392,215	210,052	99,077	10	50
Virginia and Tennessee	"	73	2,650,091	707,958	3,545,256	109,268	42,736	none	98
Winchester and Potomac	"	32	180,000	120,000	416,532	89,776	....	12	....
Wilmington and Raleigh	N .C.	161	1,338,878	1,134,698	2,965,574	510,038	153,898	6	....
Charlotte and South Carolina	S. C.	110	....	....	....	....	....	....	....
Greenville and Columbia	"	140	1,004,231	500,000	In prog.	....	....	....	....
South Carolina	"	242	3,858,840	3,000,000	7,002,396	1,000,717	609,711	7	125
Wilmington and Manchester	"	....	....	....	In prog.	....	....	....	....
Georgia Central	Ga.	191	3,500,000	418,187	3,465,879	986,074	535,608	8	116
Georgia	"	211	4,000,000	1,214	....	934,424	456,468	7½	....
Macon and Western	"	101	1,013,088	163,000	1,277,334	278,739	149,960	9	101
Musoogee	"	71	....	....	In prog.	59,590	21,731	....	....
South Western	"	50	586,887	150,000	743,525	129,395	71,535	8	....
Alabama and Tennessee River	Ala.	55	....	....	In prog.	....	....	....	....
Memphis and Charleston	"	93	776,259	400,000	In prog.	....	....	....	....
Mobile and Ohio	"	33	879,868	....	In prog.	....	....	....	....
Montgomery and West Point	"	88	688,611	....	1,330,960	173,542	76,079	8	....
Southern	Miss.	60	....	....	....	....	....	....	....
East Tennessee and Georgia	Tenn.	80	835,000	541,000	In prog.	....	....	....	....
Nashville and Chattanooga	"	125	2,093,814	850,000	In prog.	....	....	....	....
Covington and Lexington	Ky.	38	1,430,150	900,000	In prog.	....	....	....	63
Frankfort and Lexington	"	29	357,218	....	584,902	87,421	44,250	....	80
Louisville and Frankfort	"	65	....	....	....	....	....	....	....
Maysville and Lexington	"	....	....	....	In prog.	....	....	....	45
Cleveland and Pittsburgh	Ohio.	100	1,979,100	1,142,200	3,279,908	432,682	267,278	10	81¼
Cleveland and Toledo	"	147	2,000,000	1,600,000	....	....	....	93	92
Cleveland, and Erie	"	95	....	....	....	....	....	....	....
Cleveland and Columbus	"	135	3,027,000	408,200	3,655,000	777,793	483,454	12	116
Columbus, Piqua and Indiana	"	46	....	....	2,000,000	....	....	....	65
Columbus and Lake Erie	"	61	....	....	....	....	....	....	....
Cincinnati., Ham. and Dayton	"	60	2,100,000	500,000	2,659,653	321,793	200,967	....	102½
Cincinnati and Marietta	"	....	....	....	In prog.	....	....	....	62
Dayton and Western	"	40	310,000	550,000	925,000	Recently	opened.	....	75
Dayton and Michigan	"	20	....	....	In prog.	....	....	....	....
Eaton and Hamilton	"	36	....	....	....	....	....	....	56
Greenville and Miami	"	31	....	....	....	....	....	....	....
Hillsboro	"	37	....	....	In prog.	....	....	....	....
Little Miami	"	84	2,668,402	482,000	3,169,733	667,559	352,133	10	111
Mansfield and Sandusky	"	....	900,000	1,000,000	1,855,000	....	....	....	....
Mad River and Lake Erie	"	167	2,387,200	1,767,000	4,110,148	540,518	113,401	....	77¼
Ohio Central	"	57	....	....	In prog.	....	....	....	79
Ohio and Mississippi	"	....	....	....	"	....	....	....	....
Ohio and Pennsylvania	"	187	1,750,700	2,450,000	....	Recently	opened.	....	....
Ohio and Indiana	"	....	....	....	In prog.	....	....	....	....
Scioto and Hocking Valley	"	44	750,000	300,000	"	Recently	opened.	....	....
Columbus and Xenia	"	54	1,291,700	26,000	1,310,062	314,434	168,612	10	107
Evansville and Illinois	Ind.	31	....	....	In prog.	237,506	....	....	....
Indiana Central	"	....	....	....	"	....	....	....	77½
Indiana Northern	"	131	....	....	"	....	....	....	....
Indianapolis and Bellefontaine	"	83	....	....	"	Recently	opened.	....	90
Indianopolis and Cincinnati	"	90	1,128,486	1,289,000	1,869,932	Recently	opened.	....	76
Lafayette and Indianapolis	"	62	....	....	....	....	opened.	....	....
Madison, Indianapolis & Peru	"	159	2,647,700	1,241,300	2,400,000	516,414	268,075	10	70
Terre Haute and Indianapolis	"	72	632,387	663,100	1,353,019	105,944	71,446	4	108
Rock Island and Chicago	Ill.	....	....	....	....	....	....	....	....
Chicago and Mississippi	"	135	2,400,000	4,000,000	4,600,000	....	....	....	....
Illinois Central	"	....	....	....	....	....	....	....	....
Galena and Chicago	"	92	....	500,000	In prog.	473,548	286,152	....	130
Michigan Southern and Ind. N.	Mich.	315	....	3,741,564	7,276,616	1,200,922	586,929	17	112½
Michigan Central	"	282	....	3,977,563	8,618,505	1,145,598	582,816	8	103½
Pacific	Mo.	88	....	non	In progres	Recently	opened.	....	....

This shows a great falling off, but does not indicate the actual amount received. Large amounts of gold are shipped to Europe in bars from the San Francisco Assay Office, which do not come to the Philadelphia Mint.

The deposits at the Mint for the same period have been as follows:

1853.	Gold.	Silver.
January	$4,962,097	$14,000
February	3,543,523	13,000
March	7,533,752	70,000
April	4,766,000	2,550,000
Total	$20,810,372	$2,647,000

1854.	Gold.	Silver.
Jannary	$4,215,579	$108 000
February	2,514,000	1,166,000
March	3,932,000	147,000
April	3,442,000	129,000
Total	$14,153,579	$1,550,500

The shipments of specie from January 1, have been $7,366,061

Same time in 1853	5,890,370
" " 1852	9,067,564
" " 1851	12,631,148
" " 1850	1,573,298

The Bank statement for the week ending April 29th, 1854, is as follows:

	April 29.	April 22.
Loans	$90,245,049	$90,376,346
Specie	10,951,135	10,526,976
Circulotion	9,377,678	9,353,854
Deposits	59,719,381	59,225,902

Manufacture of Railroad Iron in the United States.

A correspondent in *The Philadelphia Bulletin* furnishes a list of sixteen iron establisments which will this season turn out 160,000 tuns of railroad bars, representing in production $5,550,000 for labor and 1,826,000 tuns of raw material, as follows;

		tuns.
Pig iron required.	1½ tun per tun of rails	213,333
Coal used	5½ tun per tun of rails	340,000
Iron ore	3½ tun per tun of rails	560,000
Limestone	1½ tun per tun of rails	213,333

Total number of tuns raw material. 1,826,666

The capital employed in these establisments is reckoned $10,000,000. They support a population of 92,500 persons, and consume $4,625,000 in breadstuffs, besides affording a profit to all the various branches of business in and around the mills, other than to the owners, of $1,949,000, participated in by coal lands, coal operators, ore lands, transporters and storekeepers. The following is the list of the mills and their production of rail in 1854:

Montour Iron Works, Danville, Pa	13,000
Rough and Ready, Danville, Pa	4,000
Lackawana, Scranton, Pa	16,000
Phœnix Iron works, Phœnixville, Pa	20,000
Safe Harbor, Safe Harbor, Pa	15,000
Great Western, Brady's Bend, Pa	12,000
New Works, Pittsburgh, Pa	5,000
Pottsville Iron Works, Pottsville, Pa	3,000
Cambria Iron Works, Cambria, Pa	5,000
Trenton Works, Trenton, N. J	15,000
Massachusetts Iron Works, Boston, Mass.	15,000
Mt. Savage Iron Works	12,000
Richmond Mill. Richmond, Pa	5,000
Washington Rolling Mill, Wheeling, Va	5,000
Cresent Works, Wheeling, Va	5,000
New Mill, Portsmouth, Ohio	5,000
Total	100,000

New York Canals.

The New York canals were opened for business on the first instant.

La Crosse and Milwaukee.

Circular to the Stockholders of the La Crosse and Milwaukee Railroad in Wisconsin.

An auspicious period in the history of our operations having arrived, it is appropriate, in view of progress made and difficulties surmounted, that we should interchange congratulations with our coadjutors, and for the information of those who are not cognizant of our current operations, present some of the reasons for mutual encouragement.

The Second Annual Report of the Board of Directors exhibits the condition of the Company on the 31st of December, 1853.

As at that time, so ever since, and now, the work of grading the road bed has been and is progressing with efficient forces; the first eighteen sections under Messrs. Cooke & Sherwin, and from that point to Horicon, fifty miles from Milwaukee, under Messrs. Bradley, Whittemore & Co., with every prospect of being in readiness for the iron rail in the month of June next.

The consolidation of the Milwaukee, Fond du Lac & Green Bay Railroad Company with ours, increases our nominal Capital from Four Millions to six Millions Eight Hundred Thousand Dollars.

This arrangement was negotiated and agreed upon between the Companies in the month of January last, and confirmed by the Legislature of the State of Wisconsin on the 9th of March ultimo. The advantages derived from uniting the interests, present means, and resources of the two Companies are—

1st, It restores to this Company the control of the lake terminus of the Road—the entrepot of our route.

2d, It transfers to the La Crosse and Milwaukee R. R. Co. the entire subscription to the Capital Stock of the Mil., F. du L. & G. B. R. R. Co. made in the city of Milwaukee, and by parties elsewhere, amounting in the aggregate to over Two Hundred Thousand Dollars.

3d, The iron rails for 20 miles of track, purchased by the M., F. du L. & G. B. R. R. Co., become the property of this Company, which is delivered at the dock and ready for our use.

4th, Valuable real estate in the fourth and fifth wards of this city, purchased by that Company for Depot grounds, at the cost of $30,000, becomes the property of this Company, with every prospect of increasing in value.

5th, The current expenses of carrying forward the enterprize by a plurality of organizations are reduced to those incident to only a single one; and thus in all the governmental, fiscal, executive and engineering departments, greater economy and more efficiency are secured to an undertaking, which, however it might be divided and subdivided, is, after all, a unit.

In this view of the subject we feel confident that all our associates and co-laborers at home will approbate our course, as it meets the approval of our friends abroad. Its favorable influence upon our position in the money market is already perceptible.

Our Stock Agents along the line, as Mr. Clinton's report shows, are meeting with unprecedented success, so that we begin already to see our way clear for a million dollars of that class of securities; over 100,000 dollars of which have been negotiated, and all of which will be made available for the construction and equipment of the Road.

The fiscal condition of our Company, we may without boasting say, has been an enviable one. Our contractors have at every monthly estimate been paid their cash in full for all labor performed and materials furnished, and it is still the policy of the Company to avoid, to the utmost, contracting debts at Bank, or incurring, for any purpose, heavy and embarrassing liabilities.

Help, however, we must have, in order to post pone, to the most favorable period, (which we think has not yet arrived), putting a mortgage upon our road; we therefore improve the present occasion, to urge the prompt attention of Stockholders to installments called for upon subscribed shares.

The near approach of the period when our road *must be* in operation, and the necessity of extensive preparations for that earnestly-desired event, have justified the Executive Committee in authorizing contracts for Depots, Locomotives and Cars, which will call for their share of investment during the current year—say 2 twenty-four tun machines in the months of June and July, and five more between August and December.

In providing the rolling stock of our road, the Superintendent recommends, and our Commitee have authorized, contracting for such only as is of the highest repute for efficiency and *safety*, and especially that all passenger cars be provided with six-wheel trucks—i. e. twelve wheels to each.

True, the expense will be a few hundred dollars greater than for those usually employed, but the additional safety to passengers, as well as comfort in greater breadth of seats inside, we think warrants this increased primary expenditure.

A negotiation for twelve hundred tuns more of iron rails, on satisfactory terms, is now pending, which, if closed, as we expect it may be within a few days, will provide for the extension of our track to Hartford; and vigorous efforts will continue to be put forth to reach our Horicon Depot by October next.

The final location of the route from Fox Lake to Portage City is now being made by Chief Engineer Sill, and contractors are ready to put forces on to that division of the line so soon as the means in hand will justify the commencement of the work.

Altogether, then, we say, our condition and our prospects are good; our success, thus far, has more than realized public expectations, though it has not exceeded our own purposes.

Our heart and hope are yet unabated, and, sustained by you in the future, as we have hitherto been, a bright, good day, not distant, will witness the consummation of our wishes, the triumph of complete success.

STODDARD JUDD, President.

Millwaukee, April 6, 1854.

Patent Law. Winans vs. Denmead.

The following important decision is published in advance of the volume of the Supreme Court reports, in consequence of its interest to patentees generally. It was argued at the present term of the Supreme Court, Mr. Latide for plaintiff, Mr. L. Mason Campbell for defendant.

Mr. Winans had patented a car for carrying coal, made of thin sheet iron, in the form of the frustum of a *cone*, substantially as described in his specification. The car of the defendant was made of iron of the same thickness, but was in the form of the frustrum of an *octagonal pyramid*. The excellence of both cars was due to their being self-sustaining—dispensing with framing, and carrying more coal, in proportion to dead weight, than had ever been carried before. In a word, they accomplished the same useful results, in the same way. But one was a *cone* and the other a *pyramid*. The horizontal section of one was a *circle*, and the other an *eight-sided* figure; and as the specification claimed the *conical* form only substantially, the district judge ruled that the *pyramidal* form was no infringement. And there was an appeal, and the Supreme Court, availing of the occasion, had laid down the principles upon which specifications are to be construed, in a manner that establishes the law in this respect more fully than has yet been done, and reversing the decision of the district judge, sent back the case, that it might be determined by a jury whether the defendant substantially embodied the patentee's mode of operation, and attained the same kind of result as was reached by his invention.

SUPREME COURT OF THE UNITED STATES.

No. 43—*December Term*, 1853.

Ross Winans, plaintiff in error, *vs.* Adam, Edward and Talbott Denmead. In error to the Circuit Court of the United States for the District of Maryland.

Mr. Justice CURTIS delivered the opinion of the Court.

This is a writ of error to the circuit court of the United States for the district of Maryland. The plaintiff in error brought his action in that court, for an infringement of the exclusive right to make use and sell "an improvement in cars for the transportation of coal, &c.," granted to him by letters patent, bearing date on the twenty-sixth day of June, 1847; and, the judgment of that court being for the defendants, he has brought the record here by this writ of error.

It appears by the bill of exceptions that the letters patent declared on were duly issued, and that their validity was not questioned; but the defendants denied that they had infringed upon the exclusive right of the plaintiff.

On such a trial, two questions arise. The first is, what is the thing patented; the second, has that thing been constructed, used, or sold by the defendant.

The first is a question of law, to be determined by the court, construing the letters patent and the description of the invention and specification of claim annexed to them. The second is a question of fact, to be submitted to a jury.

In this case it is alleged the court construed the specification of claim erroneously, and thereby withdrew from the jury questions which it was their province to decide. This renders it necessary to examine the letters patent and the schedule annexed to them, to see whether their construction by the circuit court was correct.

In this, as in most patent cases, founded on alleged improvements in machines, in order to determine what is the thing patented, it is necessary to inquire:

1. What is the structure or device described by the patentee as embodying his invention.

2. What mode of operation is introduced and employed by this structure or device.

3, What result is attained by means of this mode of operation.

4. Does the specification of claim cover the described mode of operation by which the result is attained.

Without going into unnecessary details, or referring to drawings, it may be stated that the structure described by this patent, is the body of a burden railroad car, made of sheet iron, the upper part being cylindrical and the lower part in the form of a frustrum of a cone, the under edge of which has a flange secured upon it, to which flange a moveable bottom is attached. This bottom is made moveable, in order to discharge the load through the aperture left by removing it.

To understand the mode of operation introduced and employed by means of this form of the car-body, it is only necessary to state, what appears on the face of the specification and was testified to by experts at the trial as correct, that by reason of the circular form of the car-body the pressure of the load outwards was equal in every direction, and thus the load supported itself in a great degree; that by making the lower part conical, this principle of action operated throughout the car, with the exception of the small space to which the moveable bottom was attached; that, being conical, the lower part of the car could be carried down below the track, between the wheels, thus lowering the centre of gravity of the load; that the pressure outwards upon all parts of the circle being equal, the tensile strength of the iron was used to a much greater degree than a car of a square form; and, finally, that this form of the lower part of the car facilitated the complete discharge of the load through the aperture when the bottom was removed.

It thus appears that, by means of the change of form, the patentee has introduced a mode of operation not before employed in burden cars, that is to say, nearly equal pressure, in all directions, by the entire load, save that small part which rests on the moveable bottom; the effects of which are that, the load, in a great degree, supports itself, and the tensile strength of the iron is used; while at the same time, by reason of the same form, the centre of gravity of the load is depressed and its discharge facilitated.

The practical result attained by this mode of operation is correctly described by the patentee; for the uncontradicted evidence at the trial showed that he had not exaggerated the practical advantage of his invention. The specification states:

"The transportation of coal, and all other heavy articles in lumps, has been attended with great injury to the cars, requiring the bodies to be constructed with great strength to resist the outward pressure on the sides, as well as the vertical pressure on the bottom, due not only to the weight of the mass, but the mobility of the lumps among each other, tending to "pack," as it is technically termed. Experience has shown that cars, on the old mode of construction, cannot be made to carry a load greater than its own weight; but by my improvement I am enabled to make cars of greater durability than those heretofore made, which will transport double their own weight of coal, &c."

Having thus ascertained what is the structure described, the mode of operation it embodies, and the practical result attained, the next inquiry is, does the specification of claim cover this mode of operation by which this result is effected.

It was upon this question the case turned at the trial in the circuit court.

The testimony showed that the defendants had made cars, similar to the plaintiff's, except that the form was octagonal instead of circular. There was evidence tending to prove that, considered in reference to the practical uses of such a car, the octagonal car was substantially the same as the circular. Amongst other witnesses upon this point was James Millholland, who was called by the defendants. He testified:

"That the advantage of a reduced bottom of the car was obtained, whether the car was conical or octagonal; that the strengthening of the bottom, due to the adoption of a conical form, was the same whether the octagonal form was adopted or the circular, That the circular form was the best to resist the pressure, as, for instance, in a steam boiler, and an octagonal one better than the square form; that the octagonal car was not better than the conical car; that, for practical purposes, one was as good as the other; that a polygon of many sides would be equivalent to a circle; that the octagon car, practically, was as good as the conical ones; and that, substantially, the witness saw no difference between the two."

The District Judge who presided at the trial, ruled:

That while the patent is good for what is described therein, a conical body in whole or in part, supported in any of the modes indicated for a mode of sustaining a conical body on a carriage or truck, and drawing the same, and to those principles which were due alone to conical vehicles, and not to rectilinear bodies, and it being admitted that the defendants' car was entirely rectilinear, that there was no infringement of the plaintiff's patent.

The substance of this ruling was, that the claim was limited to the particular geometrical form mentioned in the specification; and as the defendants had not made cars in that particular form, there could be no infringement, even if the cars made by the defendants attained the same result by employing, what was in fact, the same mode of operation as that described by the patentee. We think this ruling was erroneous.

Under our law a patent cannot be granted merely for a change of form. The act of February 21, 1793, sec. 2d, so declared in express terms; and though this declaratory law was not re-enacted in the patent act of 1836, it is a principle which necessarily makes part of every system of law granting patents for inventions. Merely to change the form of a machine is the work of a constructor, not of an inventor; such a change cannot be deemed an invention. Nor does the plaintiffs patent rest upon such a change. To change the form of an existing machine, and by means of such change to introduce and employ other mechanical principles, or natural powers, or, as it is termed, a new mode of operation, and thus attain a new and useful result, is the subject of a patent. Such is the basis on which the plainliff's patent rests.

Its substance is, a new mode of operation, by means of which a new result is obtained. It is this new mode of operation which gives it the character of an invention, and entitles the inventor to a patent; and this new mode of operation is, in view of the patent law, the thing entitled to protection. The patentee may, and should, so frame his specification of claim as to cover this new mode of operation which he has invented; and the only question in this case is, whether he has done so; or whether he has restricted his claim to one particular geometrical form.

There being evidence in the case tending to show that other forms do in fact embody the plaintiff's mode of operation, and, by means of it, produce the same new and useful result, the question is, whether the patentee has limited his claim to one out of the several forms which thus embody his invention.

Now, while it is undoubtedly true, that the patentee may so restrict his claim as to cover less than what he invented, or may limit it to one particular form of machine, excluding all other forms, though they also embody his invention, yet such an interpretation should not be put upon his claim if it can fairly be construed otherwise, and this for two reasons.

1. Because the reasonable presumption is, that having a just right to cover and protect his whole invention, he intended to do so. Howorth vs. Hardcastle Web. P. C. 484.

2. Because specifications are to be construed liberally, in accordance with the design of the constitution, and the patent laws of the United States, to promote the progress of the useful arts and allow inventors to retain to their own use, not any thing which is matter of common right, but what they themselves have created.

Grant vs. Raymond 6 Peters R. 218; Ames vs. Howard 1 Sum. 482, 435. Blanchard vs. Sprague 3 Sum. 535, 539; Davol vs. Brown 1 Wood and Minot 53, 57; Parker vs. Haworth 4 McLean's R. 372, Le Roy vs. Tatham 14 How. 181, and opinion of Parke, Baron, there quoted. Nelson vs. Harford Web. P. C, 341, Russell vs. Cowley Web. P. C. 470, Burden vs. Winslow, decided at the present term, 12 How.

The claim of the plaintiff is in the following words:

"What I claim as my invention, and desire to secure by letters patent, is making the body of a car for the transportation of coal, &c., in the form of a frustrum of a cone, substantially as herein described, whereby the force exerted by the weight of the load presses equally in all directions, and does not tend to change the form thereof, so that every part resists its equal proportion, and by which, also, the lower part is so reduced as to pass down within the truck frame and between the axles, to lower the centre of gravity of the load without diminishing the capacity of the car as described.

"I also claim extending the body of the car below the connecting pieces of the truck frame, and the line of draught, by passing the connecting bars of the truck frame, and the draught bar, through the body of the car, substantially as described."

It is generally true, when a patentee describes a machine, and then claims it as described, that he is understood to intend to claim, and does by law actually cover, not only the precise forms he has described, but all other forms which embody his invention; it being a familiar rule, that to copy the principle, or mode of operation described, is an infringement, although such copy should be totally unlike the original in form or proportions.

Why should not this rule be applied to this case?

It is not sufficient to distinguish this case to say that, here the invention consists in a change of form, and the patentee has claimed one form only.

Patentable improvements in machinery are almost always made by changing some one or more forms of one or more parts, and thereby introducing some mechanical principle or mode of action not previously existing in the machine, and so securing a new or improved result. And in the numerous cases in which it has been held that to copy the patentee's mode of operation, was an infringement, the infringer had got forms and proportions not described and not in terms claimed. If it were not so, no question of infringement could arise. If the machine complained of were a copy, in form, of the machine described in the specification, of course it would be at once seen to be an infringement. It could be nothing else. It is only ingenious diversities of form, and proportion, presenting the appearance of something unlike the thing patented, which gives rise to questions; and the property of inventors would be valueless, if it were enough for the defendant to say, your improvement consisted in a change of form, you describe and claim but one form, I have not taken that, and so have not infringed.

The answer is, my improvement did not consist in a change of form, but in the new employment of principles or powers, in a new mode of operation, embodied in a form, by means of which a new or better result is produced; it was this which constituted my invention; this you have copied; changing only the form; and that answer is justly applicable to this patent.

Undoubtedly there may be cases in which the letters patent do include only the particular form described and claimed. Davis vs. Palmer 2 Brock 309, seems to have been one of those cases. But they are in entire accordance with what is above stated.

The reason why such a patent covers only one geometrical form, is not that the patentee has described and claimed that form only; it is because that form only is capable of embodying his invention; and consequently, if the form is not copied the invention is not used.

Where form and substance are inseparable, it is enough to look at the form only. Where they are separable, where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention, for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defence that it is embodied in a form not described and in terms claimed by the patentee.

Patentees sometimes add to their claims an express declaration, to the effect that, the claim extends to the thing patented however its form or proportions may be varied. But this is unnecessary. The law so interprets the claim without the addition of these words. The exclusive right to the thing patented is not secured, if the public are at liberty to make substantial copies of it, varying its form or proportions. And therefore, the patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is in contemplation of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms.

Indeed it is difficult to perceive how any other rule could be applied, practicably, to cases like this. How is a question of infringement of this patent to be tried. It may safely be assumed that neither the patentee, nor any other constructor, has made, or will make a car, exactly circular. In practice, deviations from a true circle will always occur. How near to a circle then must a car be, in order to infringe? May it be slightly eliptical or otherwise depart from a true circle, and if so, how far?

In our judgment the only answer than can be

given to these questions is, that it must be so near to a true circle, as substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention. It is notnecessary that the defendants' cars should employ the plaintiff's invention to as good advantage as he employed it, or that the result should be precisely the same in degree. It must be the same in kind, and effected by the employment of his mode of operation, in substance. Whether, in point of fact, the defendants' cars did copy the plaintiff's invention, in the sense above explained, is a question for the jury, and the court below erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative.

The judgment of the court below must be reversed.

Journal of Railroad Law.

THE BROUGH CASE.

In this case, more properly entitled the *People of Illinois vs. the Atlantic and Mississippi Railroad Company*, Chief Justice TREAT, of the Superior Court, has affirmed the decision previously rendered in a lower court. The Chief Justice held that it was unnecessary to determine whether or not the above mentioned railroad company had the right to construct their road by virtue of the Illinois statute, providing generally for railroad associations, even, if the proceedings of defendants had not been authorised by the act in question, the subsequent legislation of Illinois would have afforded them a sanction.

If any irregularity or defects belong to the original organization of the Atlantic and Mississippi Railroad Company, the same are cured by the subsequent act of the legislature in relation to defendants, by which act the validity of such organization is fully admitted and recognised.

Even if the defendants had, before the passage of the act last above mentioned, subjected themselves to a forfeiture of their charter, the court was not at liberty to take notice of any such matters; for it belonged to the state to avail themselves of the right of forfeiting a charter, or to waive such right at their discretion, and by amply recognizing the legal existence of the defendants, the state had waived any right of depriving them of their charter for matters which arose before the legislative act in question.

THE LEGAL CONSEQUENCES OF SUBSCRIPTIONS TO STOCK COMPANIES.

This subject has, as appears from the 34th volume of Maine Reports, been of late discussed pretty fully in the Supreme Court of that state.

In the case of the Kennebec and Portland railroad vs. Jarvis, that court held that a subscriber to railroad stock cannot, when prosecuted for the price of his shares, object that he promised gratuitously and without consideration.

So did Justice Hubbard of our own Supreme Court, in 6th Howard, p. 392, in the case of *O. & S. Plank Road Company vs. Rust et al.* declare that the shares subscribed for in a stock company are personal property, and may be sold as such, and may be reached by the judgment creditors of the party who subscribed for them. And to allege, therefore, that a defendant subscribed to so many shares of stock is, in legal effect, an allegation that it was done upon the *consideration* of the ownership of those shares.

The Supreme Court of Maine also decided, in the case first above mentioned, that when the amount of stock which a corporation may hold is *not fixed by its charter*, and the corporation has determined what the amount shall be, it is not requisite to a valid assessment upon the shares of a member that the whole amount of stock should have been subscribed for, although his subscription was made before the amount of stock was determined.

A different decision would have doubtless been made if the directors of the railroad company, in this case, had not been able to justify their proceedings by the charter of the company; for where a fundamental change is made in a charter, on application of a board of directors, or even a majority of stockholders, there is abundance of reason and of legal authority to show that a stockholder cannot be bound without his consent. See 5th Hill, 383–8, Mass. R. 268, 2 Watts & Sarg. 156, also North River railroad Co. vs. Duane, Am. Law Journal for 1850, p. 481, etc.

In the Maine case, above recited, it was also held that the company might sue a delinquent subscriber, without first selling his shares, for the purpose of raising the amount of his assessments.

So in our state, in Massachusetts, and Pennsylvania, the statute remedy of declaring the stock of a delinquent subscriber forfeited for non-payment of assessments, is declared to be merely cumulative, and no wise intended to prevent the company from suing for the amount due, as in the case of an ordinary debt.

In the Kennebec and Portland Railroad Company vs. Waters, reported 34 Maine R., p. 369, the court held that a subscriber to the stock of that company could not allege that he subscribed upon a condition not expressed in the paper or book in which his subscription was conta ned.

A written contract cannot be frittered away by parol testimony.

DAMAGES IN CASE OF A BODILY INJURY UNSKIFULLY TREATED.

Newell against *The New-York and New-Haven Railroad Company.*—This action for a railroad injury was tried in our superior court last week before Judge Slosson. The plaintiff is one of the victims of the Norwalk accident, in May last, almost the only one remaining, we believe, whose claim has not been amicably adjusted and paid by the company; and in this case some attempts, unfortunately unsuccessful, have been made at a compromise between the parties. At the time of the accident, the plaintiff was on his way from his place of residence, which is in Georgia, to visit friends in New-England. He was in the front car, and was precipitated into the water; his leg was broken near the ankle, by which he was rendered permanently lame, his face was badly cut, his back was injured, and he received several other minor cuts and bruises. About a fortnight after the accident, he left Norwalk, and proceeded on his journey, having been advised by his physician that it was safe for him to do so.

The accident and the negligence of the company were admitted; the only question raised was as to the amount of damages. In mitigation of them, it was shown that the plaintiff had suffered no direct pecuniary loss; his bill for surgical attendance having been paid by the company; and the evidence of several very distinguished medical men was introduced to show that if the fracture of the leg, which was the principal injury, had been properly treated, and Mr. Newell had been prudent and careful and had not walked too soon, the fracture might have entirely healed. The question was, simply, how far the company was responsible for the injury, and how far it resulted from the plaintiff's negligence.

His Honor, Judge Slosson, instructed the Jury substantially as follows: In actions of this nature the general rule is that the party is entitled to a compensation for all such loss or damage as is the necessary or natural result or consequence of the act complained of. It will include the plaintiff's expenses and his loss of time. There may be, also, fair and just compensation for the plaintiff's bodily sufferings. By loss of time I mean, such a compensation as the Jury may think proper for the actual bodily sufferings endured by him, so far as they are attributable to the injury for which the defendants are liable.

There is another class of damages which is sometimes allowed in addition to the above; it is called *exemplary or vindictive damages.* Such damages are allowed upon the principle of punishing the offence, as the other are allowed upon the principle of compensatson only. The two unite where the injury is accompanied by malice directly alleged and proved, or by circumstances of such aggravation as are suffcient to raise a presumption of malice. In the present case, under the pleadings, evidence of malice would probably be altogether in admissible. It is not alleged. "Negligence and carelessness" are all that are alleged, and these are not denied by the defendant's answer. It is not, therefore, a case for the infliction of *exemplary damages.*

But the case presents the simple issue, and the only one for the Jury to pass upon, viz., what is the amount of compensation due to the plaintiff for his actual damage and loss, including the personal sufferings attributable to the disaster.

The extent of the general catastrophe, and the supposed or remembered horrors attending that deplorable event, should not be permitted to influence the mind of the Jury in assessing the plaintiff's damages. Justice would certainly be perverted if they allowed themselves to indulge in considerations which were not legitimately before them.

Another rule to be borne in mind is, that if the plaintiff might, by the excercise of ordinary care, have diminised the damages originally caused by the defendants negligence; or if by his own imprudence and want of ordinary precaution and care he had greatly aggravated the injury, the defendants should not be made liable for the increased damages consequent upon such imprudence.

All the physicians testify that the injury to the leg in its present condition is incurable. They also pretty uniformly concur in the opinion that the original fracture was not one of unusual severity, and was easily curable: so that the limb with proper care and treatment could have been perfectly restored, unless there was some combination of injury which had escaped detection. The main question in dispute therefore is, what is the cause of the present condition of the limb? Is it the result of the accident itself;—the n cessary and natural result? or is it owing to the plaintiff's own imprudence? or to the bad treatement of the physician? The defendants theory is, that it is attributable to one or the other, or both combined, of the latter causes;—that is, his own imprudence,

or his physician's unskillness, or both. If you are satisfied upon the evidence that the injury has been aggravated or increased by the plaintiff's own imprudence, then the defendants will not be liable for such aggravation of damage. But the imprudence of the pfaintiff which will excuse the defendants, must be a *wilful imprudence*. If, for example, he acted under the advice and with the consent of a physician, then he would not be guilty of wilful imprudence, though he might have been badly advised. But if he had used the injured limb too soon under the advice of a surgeon *whom he himself employed*, or if he had done so without advice, wilfully and recklessly, then the defendants ought not to be held liable for the aggravation or increase of injury consequent upon such imprudence; but if the physician was employed by the company, then the company would be responsible for any aggravation of the injury which arose from his bad treatment or mistaken advice.

As to who employed thse physicians, there is no distinct evidence. It is probable, that at the time of the accident, each rendered what assistance he could, from motives of humanity, and without any specific employment by any one. They were all, however, subsequently paid by the company, who paid the expenses of all the sufferers. But I am not prepared to say that this fact, that the company afterwards paid them for their service, will throw upon the defendants the increased damages, resulting from any bad treatment on the part of the physicians. I shall, therefore, leave it to you to decide, as a matter of fact, in whose employ the were, if that question should become material, which it does not, except on the theory of want of skill on their part, of which the Jury also are to judge.

If, therefore, you shall be of opinion that the present difficulty is owing to the plaintiff's *wilful* imprudence, or to the bad advice or bad treatment of a physician *employed by him*, then the defendents will not be liable for the aggravated damages. But if it is a natural result of the accident, or is attributable to the bad treatment of a physician *employed by the defendents*, then the defendents will be liable to the full extent.

In estimating the amount of damages, you are to take into consideration the circumstances in the life and the occupation of the plaintiff, and the nature and extent of the injury, whether temporary or permanent, and liberal allowance may be made to the plaintiff, including a fair and just compensation for bodily suffering, but carefully excluding all idea of exemplary or vindictive damages. The Judge here reviewed the evidence.

Verdict was rendered for the plaintiff for $5,000.

Superintendent of the Erie Railroad.

Mr. Chas. Minot has resigned the office of General Superintendent of the New York and Erie Railroad, and Mr. D. C. McCallum has been appointed as his successor, the resignation and appointment to take effect on the first day of May.

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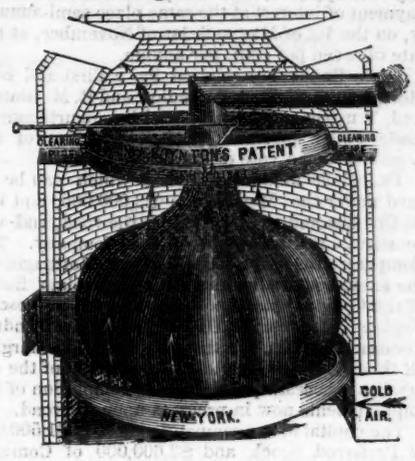

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THE undersigned having been appointed Agent for the highot respectable manufacturers Messrs. Allen, Everitt & Son or Birmingham, is prepared to take orders, at fixed prices, fly-Brass Tubes of all diameters, for Engines.—For further particulars and inspection of patterns, please apply to
JOHN H. HICKS,
March 1854. 90 Beaver str.

C. Floyd-Jones.,

Division Engineer 3d and 12th Divisions.
ILLINOIS CENTRAL RAILROAD.
Vandalia, Ill.

L. M. HOFFMAN, Auctioneer.

Railroad Iron at Auction.

L. M. HOFFMAN & CO. will sell on WEDNESDAY, 10th inst., at 12 o'clock, at the Merchants' Exchange—

1,570 Tons Railroad Iron,

T pattern, weighing 55 lbs. per yard.

For further particulars, apply at the office of the Anctioneers.

May 8. 1t

DIVIDEND NOTICE.—The SEMI-ANNUAL INTEREST falling due in this city on the first day of May next, on the following named securities, will be paid on and after that date at the office of the undersigned on presentation of the proper coupons, viz:

The Bonds of the City of Cleveland, (Ohio) issued to the Cleveland and Pittsburgh Railroad Company 7 per cents.

The Bonds of the City of Cleveland, (Ohio,) issued to the Cleveland, Painesville and Ashtabula Railroad Company 7 per cents.

The Bonds of the City of Madison, (Indiana') 6 and 7 per cents.

The Bonds of the City of Pittsburg, (Penn.,) issued to the Allegheny Valley Railroad Company (payable on the first Monday of May next,) 6 per cent.

The Madison and Indianapolis Railroad Company First Mortgage Bonds, 7 per cent.

The Sciota and Hocking Valley Railroad Company First Mortgage Bonds, 7 per cents.

The Indiana Central Railroad Company Mortgage Bonds, 7 per cents.

The Wilmington and Manchester Railroad Company Second Mortgage Bonds, seven per cents.

New York, April 29, 1854.

WINSLOW, LANIER & Co., No. 52 Wall-st.

RAIL ROAD CAR FINDINGS,

BRIDGES & BROTHER,

64 Courtlandt Street, N. Y.

WHEELS AND AXLES,

JAWS, BOXES, AND CASTINGS FITTED.

WROUGHT NUTS, BOLTS AND WASHERS,

ENGINE AND CAR SCREW BOLTS, all SIZES,

COACH LAG AND TELEGRAPH SCREWS,

LOCOMOTIVE ENGINE LANTERNS,

From the BEST Manufacturers and at their Prices,

CAR, HAND and SIGNAL LANTERNS.

COTTON DUCK, FOR CAR COVERING,

of any required width to 124 inches.

ENAMELED HEAD LININGS,

The best article made in this country.

PLUSH, and CURLED HAIR.

HAND CARS AND BAGGAGE BARROWS.

PASSENGER, FREIGHT-CAR, AND SWITCH LOCKS, DOOR KNOBS AND BUTTS.

BRASS and IRON WOOD SCREWS.

BRASS AND SILVER PLATED TRIMMINGS

For Windows and Seats.

VARNISH, COACH JAPAN, AND GLUE,

Paints, Varnish and Glue Brushes.

SILVER PLATED AND WHITE METAL LETTERS.

ENGINE and SIGNAL BELLS.

ANTI-FRICTION, OR BABBITT METAL.

PORTABLE FORGES & JACK SCREWS.

HEMP PACKING, AMERICAN, RUSSIA AND ITALIAN.

CONDUCTOR'S BADGES AND BAGGAGE CHECKS.

Iron Bronzed and Brass Hat Hooks.

VENTILATORS AND WHITE METAL RINGS,

And all other Articles pertaining to Cars.

ALBERT BRIDGES, } Late Davenport & Bridges, Car Manufacturers, Cambridgeport, Mass.

ALFRED BRIDGES, } Late Davenport, Bridges & Co., Fitchburg, Mass.

To Contractors.

The Virginia Central Railroad Co. proposes to contract for taking up about 36 rails of superstructure now laid with the strap rail, and relaying with a heavy rail, the contractor furnishing every thing except the ties which will be distributed by the company.

Sealed proposals will be received at the office of the company in Richmond, until the 24th day of May next, at 9 o'clock.

The Rail to be used must weigh from 55 to 60 lbs. to the yard. Payments to be 50 per cent. cash, and 50 per cent. in the Bonds of the company running 30 years, and secured by a mortgage on the whole property of the company.

Specifications may be obtained at the Engineer's office at Richmond, after the 10th day of May.

CHARLES ELLET, Jr.
Chief Engineer.

April 26th 1854. 3t.18

Railroad Companies and Contractors,

WANTING first rate German or Irish laborers for railroads and canal work, or mechanics of any kind, will find the undersigned a first rate office to give their orders to, as thousands of emigrants apply to them every season for employment.

Satisfactory reference will be given to well known companies and contractors, and men are forwarded to any part of the Union.

MORRIS & COHNERT,
European, American Employment Office,
287 Broadway, corner Reade-st.
3m*10 Under the Irving House, New York.

$1,700,000

LOAN OF THE MORTGAGE BONDS OF THE NEW YORK AND HARLEM RAILROAD COMPANY.

This Company will receive proposals for one million seven hundred thousand dollars of their First Mortgage Bonds, issued in sums of one thousand dollars each, payable at the office of the Company, in the City of New York, on the first day of May, 1873, with coupons attached for the payment of interest at the same place semi-annually, on the 1st of May and 1st of November, at the rate of seven per cent. per annum.

These Bonds are secured by a First and only Mortgage, to Thomas W. Ludlow and R. M. Blatchford, Trustees, on the road and its appurtenances, made under special authority of an Act of the Legislature and vote of the Stockholders.

The whole amount of Bonds which can be issued under the Mortgage is $3,000,000, and will be the first and only lien upon the road, and will constitute the sole debt of the Company. The Company reserve $1,300,000 of this Mortgage for the exchange of all the outstanding plain Bonds of the Company now in existence, and propose to dispose of the residue, One Million Seven Hundred Thousand Dollars, for the purpose of discharging all their floating dept, and of payment of the expenditure necessary for the full completion of the improvements now in progress upon the road.

The capital of the company paid in is $1,500,000 of Preferred Stock and $3,600,000 of Common Stock, upon which regular dividends have been earned and paid for the last five years of Eight (8) per cent. per annum on the former and Four (4 per cent.) on the latter.

The receipts of 1853 amounted to 964,467, being an increase of twenty-six (26) per cent over 1852, and there is no doubt a still larger business will be done the present year.

The public have therefore now offered them a home security of the most reliable character.

The Acceptances of the Company will be received in payment for the Bonds.

Twenty (20) per cent, is required to be paid on acceptance of bids, and Twenty (20) per cent. every thirty days thereafter, for which Bonds will be given; Ten (10) per cent. however of the first instalment being reserved by the Company until completion of the contract; interest to be adjusted from the 1st of May.

Parties have the privilege of making payment in full and receiving their Bonds.

Sealed Proposals will be received at the office of BLATCHFORD & RAINSFORD, No. 58 Wall street, on or before the 10th day of May next, at 3 o'clock P M.

LOCOMOTIVE ENGINES.
A. & W. Denmead & Son,

BALTIMORE, MD.

HAVING THEIR IRON FOUNDRY & MACHINE SHOP in complete operation, are prepared to execute, faithfully and promptly, orders for

Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar, Grist or Saw Mills,
Machinery for cutting all kinds of Gearing,
Hydraulic, Tobacco, and other Presses,
Car and Locomotive patent Ring-Wheels, warranted,
Bridge and Mill Castings, of every description,
Gas and Water Pipes, all sizes, warranted,
Railroad Wheels, with best fagoted axle, furnished and fit up for use, complete.

Estimates for Work, in any part of the United States, furnished at short notice. ap.14-15

Krupp's Best Cast Steel.

SUITABLE FOR

MINT AND PLATERS' ROLLERS.

ALSO of large size (72 by 18 inches diameter) for rolling Iron, Copper or Brass.

PISTONS of Steam Engines and Shafts for steamboats, not exceeding six tons weight in one piece.

Also the celebrated

CAST STEEL AXLES AND TIRE

made from a solid bar without welding. Agents

THOMAS PROSSER & SON,
16tf 28 Platt street, New York.

Railroad Iron.

470 TONS 47 lbs. per yard of best quality now in store at New Orleans. For sale by

VOSE PERKINS & CO
1m16 8 South William street.

Notice to Contractors.

Proposals will be received for all the heavy work on the Blue Ridge Rail Road, South Carolina; Blue Ridge Rail Road, Georgia: Tennessee River Rail Road, North Carolina; Knoxville and Charleston Rail Road Tennessee. The above lines of rail-way are consolidated and under the management of one Company, Extending from Anderson South Carolina, via Clayton, Georgia, Franklin North Carolina, to Knoxville Tennessee, a distance of 194 miles. That part of the road from Anderson South Carolina, to the Turniptop Mountain, a distance of 40 miles is principally earth excavation, of about equal quantities of cut and fill, with several bridges. From the Turniptop Mountain to the Rabun Gap, a distance of 24 miles, the work is very heavy, there being on the line one tunnel of 5800 feet, one of 1400 feet, and one of 400 feet in length; a suspension bridge across the Chatnga River 500 feet long, with some very heavy earth and rock cuts. The rock in the Tunnels is gneiss stratified. From the Rabun Gap to twenty miles below Franklin, a distance of 50 miles, the line follows down the Tennessee River; the class of work is principally side hill evcavation, some of which is rock; their will also be several bridges. From the point 20 miles below Franklin to Hardens, a distance of 35 miles, the line follows the Tennessee River the entire distance, causing heavy side rock excavations. On this portion of the line will be several expensive bridges, and a tunnel of about 1000 feet. From Hardens to Knoxville, a distance of 45 miles, the line follows the river about eight miles, then leaves it, running across the Chilhona mountains almost a north line to Knoxville; this portion of the road is heavy work, with about equal quantities of cut and fill, an expensive bridge 1000 feet long and 45 feet high, crossing the Holston River at Knoxville. The character of the rock from Knoxville to Hardens is limestone, and from Hardens to Franklin gneiss rock stratified, and from Franklin to Anderson, stratified sand stone and gneiss rock. The character of the earth is sandy and clay loam. The line for the whole distance runs through high table lands, well settled, remarkable for its health, good water and ample resources for subsistence. The above line of railway offers great inducements to experienced contractors. The undersigned will be prepared to receive proposals and enter into contracts for the graduation, bridging, tunneling and masonry for the heavy portion of the line, from and after the 1st day of May next, at Knoxville Tennessee, Franklin North Carolina, and Pendleton South Carolina, and will continue at such places, until the same is under contract. Profiles and maps of approximate location can be seen at each of the above places after the 1st day of May. Proposals are asked with cash payments, also eighty per cent cash and twenty per cent in the Capital Stocks or Bonds of the Company. All communications prior to may 1st must be addressed at Pendleton South Carolina.

4,13 ANSON BANGS & Co.

To Contractors.

PHILADELPHIA, WILMINGTON AND BALTIMORE RAILROAD OFFICE.—PHILADELPHIA, April 21st, 1854.—PROPOSALS will be received at this office until May 25th, 1854, for driving the piles, protecting the foundations, and for the Masonry above and under water, of the proposed Bridge across the Susquehanna River at Havre-de-Grace, Maryland.

Also, for the Grading and Masonry of the new location of the Road adjoining the Bridge, and of the Port Deposit Branch Railroad.

Plans, profiles ond specifications may be seen at the Engineer's Office, in Havre-de-Grace.

S. M. FELTON,
17,4t Pres. P. W. and B. R. R.

Railroad Iron For Sale.

ABOUT 800 tons Rails of most approved Welsh patterns, for sale by

CLARK & JESUP,
17 tf 38 Exchange Place, New York.

M. W. BALDWIN & CO., Engineers,

Broad and Hamilton streets, Philadelphia,

WOULD call the attention of Railroad Managers, and those interested in Railroad Property, to their SYSTEM OF LOCOMOTIVE ENGINES *in which they are adapted to the particular business for which they may be required;* by the use of one, two, three or four pair of driving wheels; and the use of the whole, or so much of the weight as may be desirable for adhesion; and in accommodating them to the grades, curves, strength of superstruction and rail and work to be done.—By these means the maximum useful effect of the power is secured with the least expense for attendance, cost of fuel and repairs to Road and Engine. With these objects in view and as the result of twenty-three years practical experience in the business by our senior Partner we manufacture *Five different kinds of Engines* and several classes or sizes of each kind.

Particular attention paid to the *strength of the machine* in the *plan and workmanship of all the details.* Our long experience and opportunities of obtaining information, enables us to offer these engines with the assurance that in efficiency, economy and durability they will compare favorably with those of any other kind in use.

We also furnish to order, Wheels, Axles, Bowling Tire (to fit centres without boring), Composition Castings for Bearings; every description of Copper Sheet Iron and Boiler work; and every article appertaining to the repair or renewal of Locomotive Engines.

M. W. BALDWIN. MATTHEW BAIRD.

New York and Erie R. R.

PASSENGER TRAINS leave Pier foot of Duane street, as follows, viz:—

BUFFALO EXPRESS, at 7 a. m. for Buffalo direct, over the N. Y. & E. R. R., and the B. & N. Y. City R. R., without change of baggage or cars.

MAIL, at 8¼ a. m. for Dunkirk and Buffalo, and intermediate stations. This train remains over night at Elmira, and proceeds the next morning.

WAY EXPRESS, at 12½ p. m. for Dunkirk, and intermediate stations.

ACCOMMODATION, at 3 p. m. for Delaware and intermediate stations.

NEWBURG EXPRESS, at 4 p. m., for Newburg.

WAY PASSENGER, at 4 p. m., for Piermont and intermediate stations.

NIGHT EXPRESS, at 5 p. m. for Dunkirk and Buffalo.

On Sundays only one Express Train—at 5 p.m.

These Express Trains connect at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, etc.

CHAS. MINOT, Sup't.

Great Western Mail Route.

SIXTY MILES DISTANCE SAVED TO CHICAGO AND ST. LOUIS. THE MICHIGAN SOUTHERN AND NORTHERN INDIANA RAILROAD LINE, carrying the Great Western United States Through Mail, have the following staunch first-class Steamers running on Lake Erie in connection with the NEW YORK AND ERIE RAILROAD from Dunkirk, touching at Cleveland, and connecting with their Road at Toledo, and connecting directly with the CHICAGO AND ROCK ISLAND RAILROADS at Chicago, in the same Depot, thus forming a Daily Line for Passengers and Freight from New York to the Mississippi River. NIAGARA, Capt. Miller; EMPIRE, Capt. Mitchell; KEYSTONE STATE, Capt. Richards; LOUISIANA, Capt. Davenport. Also

A DAILY LINE FROM BUFFALO DIRECT TO MONROE, by those well-known magnificent Floating Palaces, EMPIRE STATE. J. WILSON, Commander, leaves Buffalo Mondays and Thursdays; SOUTHERN MICHIGAN, A. D. PERKINS, Commander, leaves Buffalo Tuesdays and Fridays; NORTHERN INDIANA, I. T. PHRATT, Commander, leaves Buffalo Wednesdays and Saturdays.

One of the above splendid Steamers will leave the Michigan Southern Railroad Line Dock, at 9 o'clock, P. M. every day, (except Sundays) and run direct through to Monroe without landing, in 14 hours, where the LIGHTNING EXPRESS TRAIN will be in waiting to take passengers direct to Chicago in 8 hours, arriving next evening after leaving Buffalo.

Running time from New York to Buffalo....14 hours.
Running time from Buffalo to Monroe.....14 hours.
Running time from Monroe to Chicago..... 8 hours.

Total.....36 hours.

Connecting at Chicago with a fine line of Low Pressure Steamboats to all places north of Chicago to Green Bay; also with Chicago and Rock Island Railroad to La Salle, and there connect with Illinois River Line of Steamboats, or Express Trains of ILLINOIS CENTRAL AND CHICAGO AND MISSISSIPPI RAILROADS, or connecting at Rock Island with regular line of steamers for all points above and below, making the cheapest and most direct Route to St. Louis, Rock Island, Minnesota, and the Great West.

The AMERICAN LAKE SHORE RAILROADS from Buffalo and Dunkirk connect with this line at Toledo, forming the only direct and continuous line of Railroads from the Atlantic Seaboard to the Valley of the Mississippi.

Running time to Chicago, 36 hours; to St. Louis, 56 hours.

FOUR DAILY TRAINS by Railroad all the way.

TWO DAILY LINES by Steamers on Lake Erie.

Thus the Traveller and Shipper can see at a glance that no other Line can enter the lists as competitors.

Passengers Ticketed Through from New York with privilege of stopping over at any point on the route, and resuming seats at leisure, either by the New York and Erie Railroad, via Dunkirk, New York and Erie and Buffalo and New York City Railroad via Buffalo; People's Line of Steamboats, Hudson River or Harlem and New York Central Railroads, via Albany and Buffalo.

For any further information, Through Tickets, or Freight, apply at the Company's Office, No. 193 Broadway, corner of Dey st., N. Y., to JOHN F. PORTER, General Agent, or L. P. DUNTON, Ticket Agent.

Passenger Cars for Sale.

TWO first class Passenger Cars, built by one of the best car builders in the country, for the Baltimore and Ohio Railroad.

The above presents a rare opportunity to any Railroad Company wishing first class cars for immediate use.

They will be sold at a bargain for cash or good paper. Enquire at the office of Bridges & Brothers, 64 Courtland Street.

New York, Feb. 21st, 1854.

Railroad Iron.

THE Subscribers are at all times prepared to enter into contracts for Railroad Iron, of Messrs. Guest & Co., or other leading manufacturers' make, delivered free on board vessels in England or in this country.

BOORMAN, JOHNSTON & CO.,
Sept. 7. 90 Broadway, New York.

MANUFACTURERS' AGENCY
FOR
RAILROAD FURNISHING,
Office 18 *Dearborn St., Chicago, Ill.*
E. R. T. ARMSTRONG, Agent,

KEEPS constantly on hand *Railroad Spikes*, Burden's make, *Railroad Wrought Iron Chairs*, superior quality, Ames' manufacture of *Locomotive Tires, Cranks, &c.* Washburn, Pond & Co.'s *Car Wheels*, of best Salisbury and Stirling Iron, mixed under direction of Mr. Washburn, and warranted.

Orders invited for *Locomotive and Car Rolled or Hammered Axles—Locomotive Lamps—Superior Pumps, for Stations, Switch Stands, Levers, and Targets—Locomotive Drivers and Cylinders—Boxes and Pedestals—Screw Cutters and Drilling Machines—Frog's Heads and Heel Blocks—Screw Presses, for forcing Wheels and Axles.*

Oils of a superior quality, made expressly for railroads, and free from gums.

Refer to—Illinois Central railroad, Ohio and Mississippi river railroad. Michigan Southern railroad. Galena and Chicago Union railroad. Milwaukee and Mississippi river railroad. Little Miami railroad, Cincinnati, Hamilton and Dayton railroad. Central Ohio railroad. 14.6mo's.

S. SEYMOUR & CO. GENERAL RAILROAD AGENCY, Office, Metropolitan Bank Building. No 110 Broadway, have to dispose of at private sale, in amounts to suit persons desiring to invest, the following valuable Securities:

LOUISVILLE CITY BONDS, at 30 years
OHIO AND MISSISSIPPI R.R. STOCK, drawing interest.
MAYSVILLE AND LEXINGTON MORTGAGE BONDS, at 24 years.
MAYSVILLE AND LEXINGTON R. R STOCK.
SCIOTO AND HOCKING VALLEY R.R. STOCK.
SCIOTO AND HOCKING VALLEY R.R. FIRST MORTGAGE CONVERTIBLE BONDS, at 11 years.
LOUISVILLE AND NASHVILLE R.R. STOCK.
BUFFALO AND STATE LINE R.R. BONDS.

They are prepared to negotiate contracts for the construction and equipment of Railroads in any part of the country, including furnishing corps of engineers and contractors locomotive engines and cars, railroad bridges. McCallum's patent, railroad iron, chairs, spikes, switch irons, &c., &c.

Notice to Contractors.

PACIFIC RAILROAD OF MISSOURI.

SEALED proposals will be received by the undersigned, at their office in the city of St. Louis, until six o'clock, P. M., of the 15th day of May next, for the Grading, Masonry, etc., of the first division of the South-west Branch of the Pacific Railroad, extending from Franklin Depot, the present terminus of the road, some 40 miles West of St. Louis, to the crossing of the Gascenade River, a distance of about 78 miles. The line will be divided into sections of about one mile each, and proposals may be made for one or more sections. The line, plans, profiles, specifications, form of contract, etc, will be ready for inspection on and after the first day of May next. The work to be let is quite heavy, situated in a healthy country, and is easy of access.

The undersigned reserve to themselves to reject all proposals that are not satisfactory.

A. S. DIVEN & CO.

March 24th, 1854.

OGDEN & DELAFIELD'S,

Late OGDEN & MARTIN.

Rosendale Cement.

WE are prepared to enter into arrangements for supplying our cement for public works or other purposes. We warrant the cement equal in every respect to any manufactured in this country. It attains a great degree of hardness, setts immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, on application at their office, by OGDEN & DELAFIELD, 104 Wall st.

The above cement is used in most of the fortifications building by government. 17

Pneumatic Pile Driving.

FOUNDATIONS FOR BRIDGES, PIERS &C.

BY THE PNEUMATIC process hollow cylindrical piles or tubes from eight inches to ten feet diameter can be driven through sand, mud, clay or other material to any required depth. The complete success which has attended the operations of this process shows it to be eminently practicable in, and much the best method known for, the construction of railroad bridges across deep and rapid rivers where permanent foundations o great strength are necessary, and have to be secured at grea depth.

Applications for license for the use of the invention in any part of the United States may be made to H. V. POOR, Esq Editor of the *American Railroad Journal*, 9 Spruce street; o for contracts for pile driving, or licenses as above to

CHARLES PONTEZ,
March 25th, 1854. New York.

To Contractors.

PACIFIC RAILROAD OF MISSOURI

THIRD AND FOURTH DIVISIONS.

IT is intended to make contract for the third divisions of this road, (extending from the Missouri river at Jefferson City, passing near Georgetown and Warrensburgh, to the Missouri river near Independence, about 160 miles,) so soon after the first of May next, as satisfactory proposals shall be made.

Contract will be made for the whole now offered, or such parts as particular contractors may select in form and quantity to suit the interests of the company. Proposals are asked for by the cubic yard, with cash payments; but contractors may, if they desire, accompany their offer with proposals for two thirds cash and one third in county and railroad mortgage bonds or other securities.

Profiles and maps of approximate location can be seen after first of April next at Pacific Railroad Office, in St. Louis, and any information will be given on application to the Engineer.

The first division of this road is now in operation; the second division to Jefferson City under present course of construction.

The third and fourth divisions now offered pass over a high, rolling mixed prairie and timbered country, and for healthfulness and supply of provisions will compare favorably with any part o the west. THOS. ALLEN, Pres.

THOS. S. O'SULLIVAN, Chief Eng.

Pacific R. R. Office, St. Louis, Feb. 1854.

For Sale.

THE ROSSIE FURNACE AND FOUNDRY, etc., St. Lawrence County, N. Y.—This well known establishment, having attached to it a large and complete Casting House and Machine Shop, with ample accommodations for workmen, and every convenience necessary to the the prosecution of an extensive business, together with valuable Iron Mines and Mining Rights, also Timber Lands, is offered for sale by the proprietor, who retires from the business. The capacity of the Rossie Furnace for making iron, is believed to be unsurpassed by any charcoal Furnace in the country, having repeatedly run up to fourteen tons per day, with 55 to 60 per cent. yield from ores—specular red oxides—coal, per ton, 100 bushels. The same has been in uninterrupted operation for over twenty years, and the reputation of its iron is established throughout the West. The location of these works is in the village and town of Rossie, county of St. Lawrence, N. Y., six miles from the River St. Lawrence, and connected therewith by a plank road. Their cost, apart from premises and water power, has involved an expenditure of over $100,000, and their present efficiency, in every respect, is considered unexceptionable. For further information apply to D. W. Baldwin, Agent, at the works, or to the undersigned.

G. PARISH.
Ogdensburgh, N. Y., April, 1853. 15,3m*

To Chief Engineers.

A Gentleman who has had some Eight years Experience in construction of various Eastern and Western Railroads desires a situation as Resident Engineer upon some railway in the United States. The best of references as to Capability and Efficiency can be furnished. Address B. care of John Palmer Esq. East Cambridge Mass. 17 tf

Railroad Iron.

THE Undersigned, Agents for the Manufacturers, are prepared to contract to deliver free on board at shipping ports in England, or at ports of discharge in the United States, Rails of superior quality, and of such weight or pattern as may be required.

VOSE, PERKINS & CO.,
9 South William St.

New York, June 1, 1851.

Knox & Shain,

MANUFACTURERS OF
LEVELS, TRANSITS AND SURVEYING COMPASSES.
No 72 Dock st. first door south of Walnut, west side
PHILADELPHIA.

First Premium awarded by the Franklin Institute.

Stuart, Serrell & Co.,

CIVIL ENGINEERS,
Rooms 22, 24, 26 & 27,
157 Broadway, New York.

CHARLES B. STUART, DANIEL MARSH, EDWARD W. SERRELL, SAMUEL MCELROY.

Important to Railway Co's.

A GREAT improvement has recently been perfected in the manufacture of Dumping Gravel Cars by which the cost is materially lessened and the strength and durability much increased.

We have secured the right to manufacture these improved Cars and can supply them at prices ten per cent. lower than the ordinary kind.

Orders directed to the Hamilton Car Co., Hamilton, Ohio, will receive prompt attention.

South-Western Car Shops, Madison, Indiana.

THE subscriber is prepared to execute orders at short notice, for all kinds of Passenger, Freight and other descriptions of Railroad Cars.

Work delivered at any point accessible by railroad, or by the Ohio and Mississippi rivers.

Facilities for transportation, enable the subscriber to afford peculiar advantages to Companies requiring work delivered in the South and West,

W. CLOUGH.

Refer to

JNO. BROUGH, Esq. WINSLOW, LANIER & Co.

feb.18. 1m.

Ontario, Simcoe & Huron R.R. CANADA.

THIS road opened in May last to Lake Simcoe is expected to be completed to the Georgian Bay, Lake Huron a distance of 96 miles in June next where it will form the shortest and most agreeable route to the North Western States to Lake Michigan and to the Mineral Regions of Lake Superior.

At present the Passenger Trains leave Toronto for Barrie (64 miles) daily at 8 a.m. and 3. 30 p.m,, returning the same day—On the opening of the navigation a Steamer will ply on Lake Simcoe in connexion with the Trains and will convey passengers through that Lake and Lake Conchiching to Orilla whence a short portage of eighteen miles will take them to the waters of Lake Huron to the Steamer (Kaloolah) which runs to the Sault St. Marie and intermediate ports forming the most expeditious and agreeable route to the Mineral Regions of Lakes Huron and Superior.

Arrangements will be made on the completion of the road to the Georgian Bay for a line of first class Steamers to extend their trips to the ports on Lake Michigan.

ALFRED BRUNEL,
Superintendent.

Cast Iron Chilled Slip Tires for Engine Driving Wheels.

THE undersigned, principal Agent for the above improvement, offers it, with the right of use, to Railroad Companies and others. The cost of these Tires is less than *one-third* that of wrought iron, the cost of renewing *one-quarter*; and the *adhesion, strength*, and *durability* equally as great, as will be proved to the satisfaction of any party. Over *two hundred* locomotives of the heaviest class, (25 to 30 tons,) upon the Baltimore and Ohio Road, are shod with cast iron, with an acknowledged saving over wrought iron equal to $30,000 per annum. Address

15,1.f ZERAH COLBURN, Paterson, N. J.

Railroad Car Works.

THE Undersigned are prepared to manufacture for Railroad Companies, Passenger, Baggage, Cattle, Freight, Gravel and Hand Cars, also Baggage Barrows and Freight Trucks.

F. HUNGERFORD & CO.

Maysville, Ky., Sept. 29, 1853.

Railroad Iron.

1,300 TONS superior quality Yorkshire rails 56 pounds T pattern can be immediately delivered at New York, Savannah, or New Orleans.

For sale by

NAYLOR & CO.

New York, April 1st, 1854.

To Locomotive Engine Builders and Engineers.

THE Proprietors offer for rent for a term of years, with immediate possession, the splendid property, known as the BELLEVILLE IRON WORKS, situated on the Mississippi, directly opposite the City of New Orleans, and within 300 feet of the River, with which it is connected by fine wharves and landings.

The buildings are of brick, with slated roofs, and were erected in 1848 at a very heavy expense; are of a most substantial and durable character and admirably fitted for a Foundry and Machine Shops, or almost any mechanical business. They now contain a new and powerful Engine and Boiler and sufficient machinery, say, planing machines—lathes—boring machines, blacksmith's tools, &c., &c., to employ 100 mechanics, and could be put in working order in a few days. The Buildings cover a lot 300 feet square and are amply large to receive the necessary machinery for the use of 800 to 1000 workmen.

The terminus and depot of the New Orleans, Opelousas and Great Western Railroad is situated about 300 yards from the above property, which could be availed of to great advantage for the manufacture of Locomotives and Railroad work, generally as well as Steam Engines, Sugar Mills, and other descriptions of Machinery.

There are no Shops in New Orleans for the manufacture of Railroad Machinery, and as the Railroad Companies now organized in that city contemplate the construction of over 1000 miles of road,—a large part of which is already under contract,—the property now offered for lease offers a most eligible opportunity for parties desiring to contract to furnish the Engines and Machinery,—for those roads. Responsible contractors with their works on the spot would have an advantage over Northern Workshops in contracting for the Work of the Railroads terminating in New Orleans.

The Establishment and prospect of remunerating work to be secured immediately are worthy the attention of manufacturers and Engineers generally.

Applications from responsible parties will be promptly attended to, and to satisfactory parties the proprietors of the Works can offer favorable terms and arrangements.

Letters may be addressed to

R. B. SUMNER,
No. 61 Camp Street,
New Orleans;

and further information may be had by applying to Messrs. BARSTOW & POPE, Pine Street, New York.

Railroad Spikes, Boiler Rivets, etc.

THE Subscribers, Agents for the sale of James S. Spencer's, Jr., Railroad and Boat Spikes, Boiler Rivets, and Wrought Iron Chairs for Railroads, made at his Works near this city, will execute all orders with promptness, despatch, and of the best quality.

ALSO IMPORTERS of English refined and Merchant bar Iron; Extra refined Car and Locomotive Axles (from 3½ to 6½ inches in diameter); B. O. Locomotive Tire (welded by Baldwin). Also, supply Boiler and Flue Iron cut to pattern or otherwise.—Spring, Shear, and Cast Steel, etc., etc., etc.

T. & E. GEORGE.

Philadelphia, November 14, 1850.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the *very best* quality for special purposes, is respectfully invited.

COOPER & HEWITT,
17 Burling Slip, New York.

February 15, 1850.

Notice to Contractors.

MEMPHIS & OHIO RAILROAD.

SEALED proposals will be received at the office of the Memphis and Ohio Railroad Company, at Memphis, Tenn., until the 15th day of April next, for the grubbing, clearing, gradation, and masonry of the first 65 miles, from Memphis to Cherryville.

Contractors must give the most undoubted security for the completion of the work at the time, and in the manner specified; and contracts will be let in sections, or for the entire work, as may be deemed best by the Directors.

The Directory reserve the right of rejecting all bids, should none prove satisfactory; and it is desirable that all propositions should be submitted, with the view of preparing the whole work for the iron as soon as possible. Bids of that character and otherwise equally favorable, will have preference.

Maps, plans and specifications may be seen at the office of the company, after the first of April.

E. PEABODY,
Engineer in charge.

Notice To Contractors.

OFFICE OF THE VICKSBURG, SHREVEPORT AND TEXAS RAIL ROAD COMPANY
Monroe, La., March 8th, 1854.

SEALED PROPOSALS wil be received at this office until the 1st day of June next, at 2 o'colck P. M., for clearing and grading the section of road between the Mississippi river and Richmond, in the parish of Madison—a distance of about twenty miles; also, for clearing and grading the section between the city of Shreveport and the Texas State line, in the parish of Caddo—a distance of about twenty miles; and, also, for clearing and grading a section of twenty mile, beginning at the Ouachita river and running west, in the parish of Ouachita.

Bids may be made for the entire sections, or any portion thereof, not less than one mile, and those proposing to take stock of the Company in part payment, will be most favorably considered. The lines, plans, profiles and quantities of work, together with the specifications, are now ready for examination in the office of the Company. Payments in the proportion of four-fifths of the amounts due will be made at the end of each month or quarter, as may be agreed on, during the progress of the work.

The company reserves the right to accept such proposals as in their judgment will secure the prompt and faithful execution of the work according to contract; or to reject all if none are satisfactory.

Further information may be obtained from the undersigned.

N. D. COLEMAN,
President.
P. J. TOURNADRE,
7t14 *Chief Engineer.*

Railroad Iron.

5,000 TONS T RAILS, about one-half weighing 59 lbs. per yard and the remainder 56 lbs. per yard now in bond and for sale by

JOHN H. HICKS,
2d Feb'y. 90 Beaver street.

H. SAWYER

(of the late firm of SAWYER & HOBBY),
Manufacturer of Transits and Levels,
HAS removed to Union Place near Warburton Av., Yonkers, N. Y.

Railroad Iron.

1250 Tons Erie Pattern Guest and Co's make, weighing 57½ lbs. per yard, to be shipped from Wales in July and August, for this port—for sale by

BOORMAN, JOHNSTON & CO.,
June 9, 1853. 90 Broadway, New York.

Railroad Iron.

THE "Montour Iron Company" is prepared to execute orders for Rails of the usual patterns and weights, and of any required length not exceeding 30 feet per rail. Apply to

THOS. CHAMBERS, President,
September, 1850.